HITACHI

SERVICE MANUAL

NTSC

AP92 Chassis

PA

No. 0114

50GX49B

R/C: CLU-435UI

CONTENTS

SAFETY PRECAUTIONS 3
SERVICING PRECAUTIONS 6
TECHNICAL CAUTIONS 10
SPECIFICATIONS 11
CIRCUIT PROTECTION 11
GENERAL INFORMATION 12
CUSTOMIZED PICTURE AND SOUND ADJUSTMENTS 13
CAUTIONS WHEN CONNECTING/DISCONNECTING THE HV CONNECTOR 16
SERVICE ADJUSTMENTS 17
TROUBLESHOOTING 31
PROTECTION CIRCUIT BLOCK DIAGRAM 38
BASIC CIRCUIT DIAGRAM 39
PRINTED CIRCUIT BOARDS 53
BLOCK DIAGRAM 56
WIRING DIAGRAM 57
EXPLODED VIEW 61
REPLACEMENT PARTS LIST 62

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in this service manual.

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a ⚠ on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

*For continued x-radiation protection, replace picture tube with original type of Hitachi approved equivalent type.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

PROJECTION COLOR TELEVISION

APRIL 1999 HHEA-MANUFACTURING DIVISION

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a ⚠ on the schematics and on the parts list in this service manual and its supplements and bulletins. Before servicing this chassis, it is important that the service technician read and follow the "Safety Precautions" and the "Product Safety Notices" in this Service Manual.

For continued X-Radiation protection, replace picture tube with original type or Hitachi approved equivalent type.

This Service Manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

This television receiver provides display of television closed captioning in accordance with section 15.119 of the FCC rules.

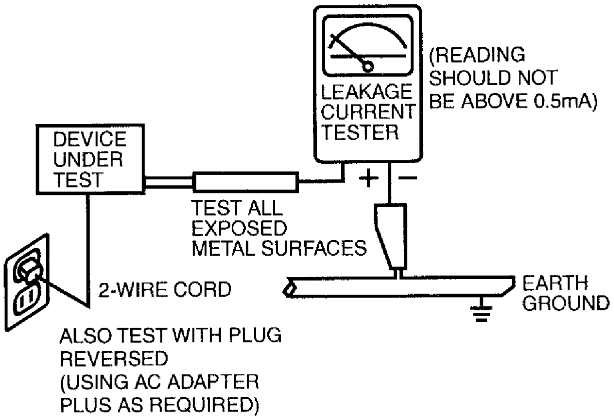
SAFETY PRECAUTIONS

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including but not limited to the following items.
   a. Be sure that no built-in protective devices are defective and/or have been deleted during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpaper, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

   b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to (1) spacing between the picture tube and cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

   c. **Antenna Cold Check** – With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input, exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohms or greater than 5.2 megohms, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

   d. **Leakage Current Hot Check** – With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamps. Reverse the instrument power cord plug in the outlet and repeat test.


LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
DEVICE UNDER TEST
+
–
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
EARTH GROUND
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUS AS REQUIRED)

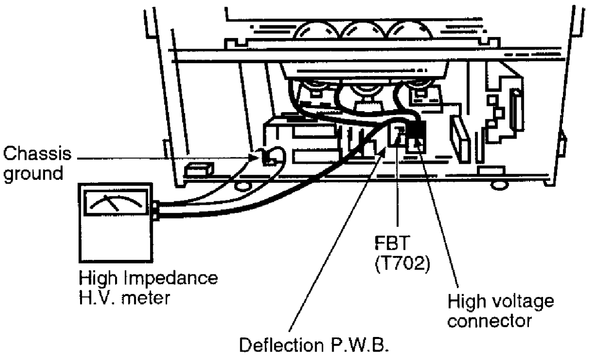
AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

   e. **High Voltage** – This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply will all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.

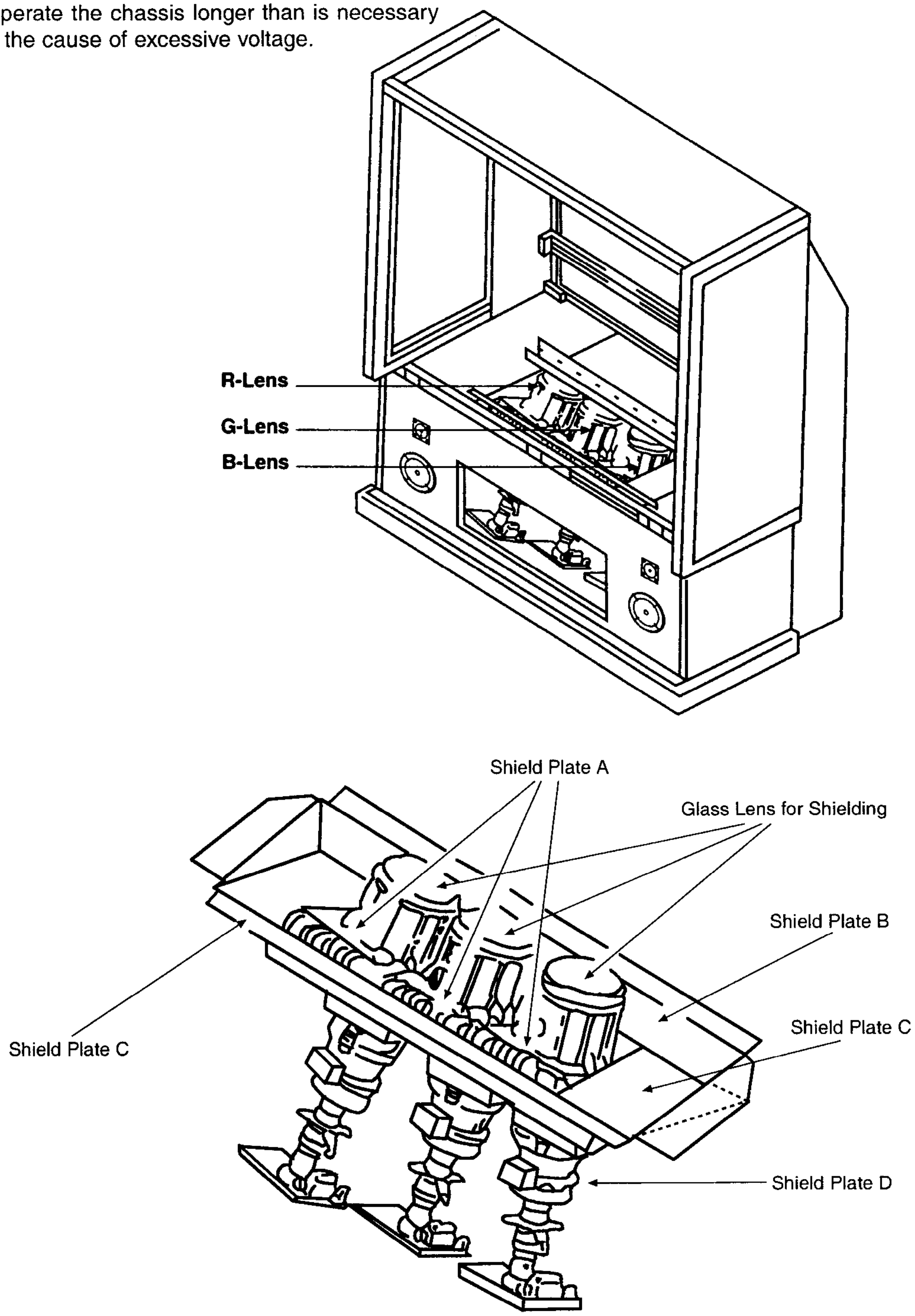
   f. **Service Warning** – With maximum contrast, operating high voltage in this receiver is lower than **31.5 kV.** In case any component having influence on high voltage is replaced, confirm that the high voltage with maximum contrast is lower than **31.5 kV.**
   To measure H.V. use a high impedance H.V. meter. Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram.)

   Note: Turn power switch off without fail before the connection to the anode button is made.



g. **X-radiation – TUBE:** The primary source of X-radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X-radiation emissions.
For continued X-radiation protection, the replacement tube must be the same type as the original, Hitachi approved type.
When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component.
Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

h. **X-radiation Shield –**
   1. This receiver is provided with X-ray shield plates for protection against X-radiation. Do not remove X-ray shield plates A, B, C, or D shown in Fig. 1 unnecessarily, when troubleshooting and/or making test measurements.
   2. To prevent X-radiation, after replacement of picture tube and lens, confirm these components to be fixed correctly to bracket and cabinet, and not to be taken off easily.



Detailing X-radiation shield

Fig. 1. Detailing X-radiation Shield

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. **Design Alteration Warning** – Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions including but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connectors, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** – The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck.

5. **Hot Chassis Warning** – **a.** Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safely serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. Confirm that the AC power plug is inserted correctly with an AC voltmeter by measuring between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground. **b.** Some TV receiver chassis normally have 85V AC (RMS) between chassis and earth ground regardless of the AC plug polarity. These chassis can be safely serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection. c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: **a.** near sharp edges, **b.** near thermally hot parts – be sure that leads and components do not touch thermally hot parts, **c.** the AC supply, **d.** high voltage and **e.** antenna wiring. Always inspect in all areas for pinched, out-of-plate, or frayed wiring. Do not change spacing between components and the printed circuit board. Check AC power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

8. **PRODUCT SAFETY NOTICE** – Many TV electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified in Hitachi service data by shading on schematics and by a ⚠ in the parts list. Use of substitute replacement that does not have the same safety characteristics as the recommended replacement part in Hitachi service data parts list might create shock, fire, and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current Hitachi service literature. A subscription to, or additional copies of service literature may be obtained at a nominal charge from Hitachi.

SERVICING PRECAUTIONS

CAUTION: Before servicing instruments covered by this service data and its supplements and addenda, read and follow the SAFETY PRECAUTIONS on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Guidelines

1. Always unplug the instrument AC power cord from the AC power source before:
   a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
   b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
   CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc." The H.V. Distribution Box has an internal 400MΩ resistor (bleeder resistor) connected from the high voltage to ground. After power is removed from the instrument the high voltage will discharge through the high voltage bleeder resistor. If the tubes have high voltage after power is removed, then the bleeder resistor is defective or the bleeder ground is disconnected.
3. Discharge the picture tube's anode at any of the R, G, or B outputs on the H.V. Distribution Box only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube high voltage distribution box R, G, or B output, using an insulated handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this instrument or any of its assemblies.
5. Unless specified otherwise in these service data, clean electrical contracts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength).
   CAUTION: This is a flammable mixture. Unless specified otherwise in these service data, lubrication of contacts is not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heatsinks are correctly installed.
8. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.
9. Use with this instrument only the test fixtures specified in this service data.
   CAUTION: Do not connect the test fixture ground strap to any heatsink in this instrument.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or desolder ES devices.
4. Use only can anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES device.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.

2. Use an appropriate gauge of resin-core solder composed of 60 parts tin/40 parts lead.

3. Keep the soldering iron tip clean and well-tinned.

4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.

5. Use the following desoldering technique.
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).

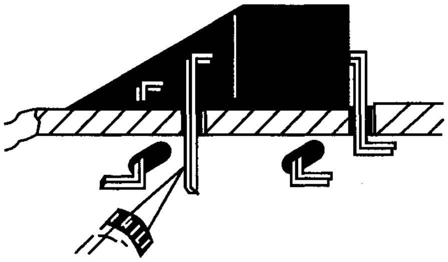
   b. Heat the component lead until the solder melts. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).

   b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.

   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil or components.

   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.



Use Solding Iron to Pry Leads

IC Removal/Replacement

Some Hitachi unitized chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.

2. Carefully bend each IC lead against the circuit foil pad and solder it.

3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to areas.)

"Small-signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.

2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.

3. Bend into a "U" shape the replacement transistor leads.

4. Connect to replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact, then solder each connection.

Power Output Transistor Devices Removal/Replacements

1. Heat and remove all solder from around the transistor leads.

2. Remove the heatsink mounting screw (if so equipped).

3. Carefully remove the transistor from the circuit board.

4. Insert new transistor in circuit board.

5. Solder each transistor lead, and clip off excess lead.

6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.

2. Bend the two remaining leads perpendicularly to the circuit board.

3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.

4. Securely crimp each connection and solder it.

5. Inspect (on the circuit board copper side) the solder joints of the two "original leads". If they are not shiny, reheat them and, if necessary, apply additional solder.

Fuses and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp leads of replacement component around stake 1/8 inch from top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off," the board. The following guidelines and procedures should be followed whenever this condition is encountered.

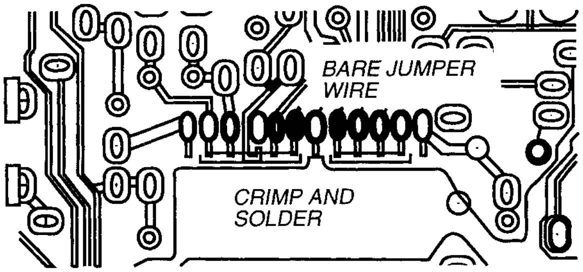
In Critical Copper Pattern Areas

High component/copper pattern density and/or special voltage/current characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these areas is designated as Critical Copper Pattern. Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your Hitachi personnel.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.

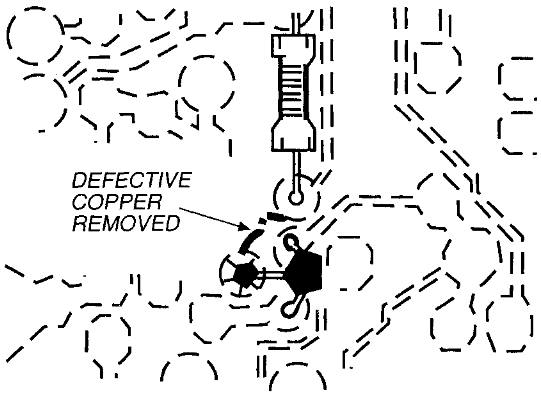


Install Jumper Wire and Solder

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.



Insulated Jumper Wire

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both wire sides of the pattern break and locate the nearest component directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

Frequency Synthesis (FS) Tuning Systems

1. Always unplug the instrument AC power cord before disconnecting or reconnecting FS tuning system cables and before removing or inserting FS tuning system modules.
2. The FS tuner must never be disconnected from the FS tuning control module while power is applied to the instrument.
3. When troubleshooting intermittent problems that might be caused by defective cable connection(s) to the FS tuning system, remove the instrument AC power as soon as the defective connector is found and finish confirming the bad connection with a continuity test. This procedure will reduce the probability of electrical overstress of the FS system semi-conductor components.

NOTE: ***These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.***

Leadless Chip Components (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chip capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitors may also be limited for the same reason. It is recommended that identical chip components be used..

Chip resistors have a three digit numerical resistance code -1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6K resistor, 0 = 0 (jumper). Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

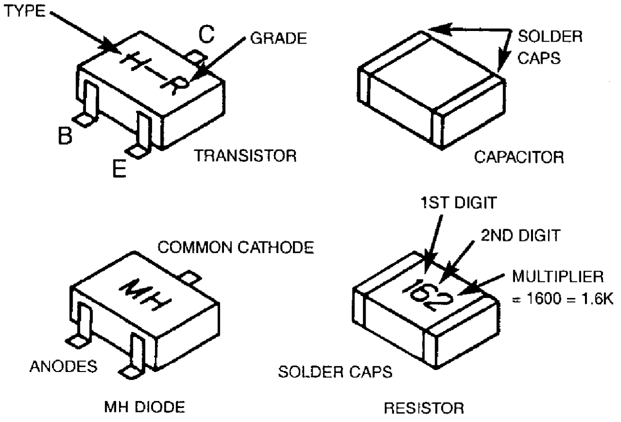
Component Removal

1. Use solder wick to remove solder from component end caps or terminals.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal .

Chip Component Installation

1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds

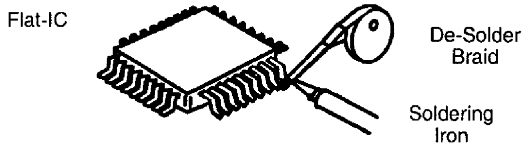
Chip Components


TYPE
C
GRADE
B
E
TRANSISTOR
SOLDER CAPS
CAPACITOR
COMMON CATHODE
ANODES
MH DIODE
1ST DIGIT
2ND DIGIT
MULTIPLIER = 1600 = 1.6K
SOLDER CAPS
RESISTOR

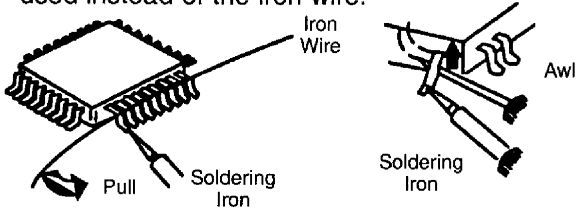
How to Replace Flat-IC
—Required Tools—

- Soldering iron
- De-solder braids
- iron wire or small awl
- Magnifier

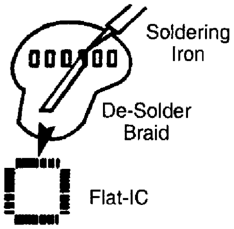
1. Remove the solder from all of the pins of a Flat-IC by using a de-solder braid.


Flat-IC
De-Solder Braid
Soldering Iron

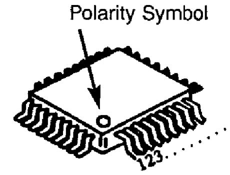
2. Put the iron wire under the pins of the Flat-IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.


Iron Wire
Pull
Soldering Iron
Awl
Soldering Iron

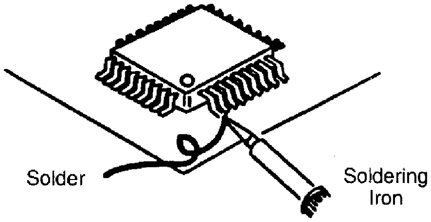
3. Remove the solder from all of the pads of the Flat-IC by using a de-solder braid.


Soldering Iron
De-Solder Braid
Flat-IC

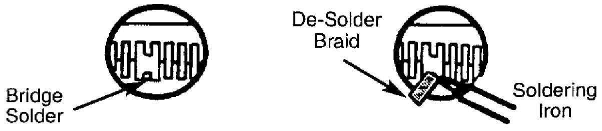
4. Position the new Flat-IC in place (apply the pins of the Flat-IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol.


Polarity Symbol
123

5. Solder all pins to the soldering pads using a fine tipped soldering iron.


Solder
Soldering Iron

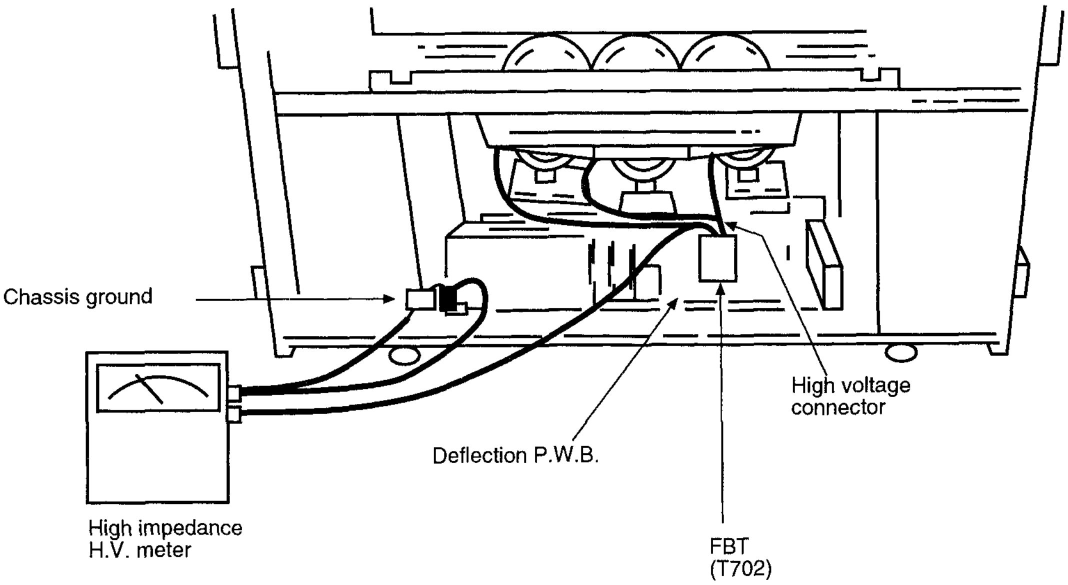
6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de-solder braid as shown in the figure below.


Bridge Solder
De-Solder Braid
Soldering Iron

TECHNICAL CAUTIONS

High Voltage limiter circuit operation check.

1. Turn off TV and connect jig as shown in Figure 2. Adjust jig fully counter-clockwise for minimum resistance.
2. Set the AC input to 120V AC and turn on TV.
3. Confirm test pattern on CRT is a usable picture, then slowly adjust jig until the picture disappears and TV shuts down.
4. When the limiter circuit is operating properly, High Voltage will be less than 36.5 kV at 0.6mA when TV shuts down.
5. Turn off set immediately after checking circuit operation.
6. Unplug set for one minute to reset shutdown circuit. Remove jig and voltmeter.


Chassis ground
High impedance H.V. meter
Deflection P.W.B.
High voltage connector
FBT (T702)

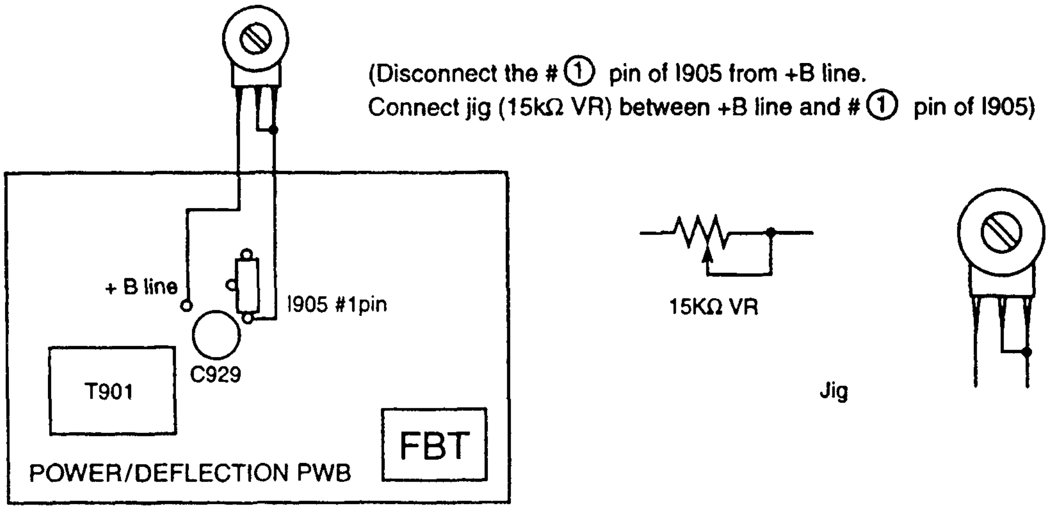

**(Disconnect the #① pin of I905 from +B line.
Connect jig (15kΩ VR) between +B line and #① pin of I905)**
+ B line
I905 #1pin
C929
T901
POWER/DEFLECTION PWB
FBT
15KΩ VR
Jig

Fig. 2. Deflection/Power P.C.B.

SPECIFICATIONS

Model:	50GX49B	
Cathode-Ray Tube:	R=180DLB22R G=180DLB22G B=180DLB22B	
Power Input:	120 volts AC, 60 Hz	
Power Consumption:	184 Watts - Maximum 152 Watts - Operating	
Antenna Impedance:	75 ohm Unbalanced VHF / UHF / CATV	
Receiving Channel:	BAND	CH
	VHF	2~13
	UHF	14~69
	EXT. Mid	(A-5)~(A-1), 4+
	CATV Mid.	A~I
	CATV Super	J~W
	CATV Hyper	(W+1)~(W+28)
Intermediate Frequency:	Picture I-F Carrier 45.75 MHz Sound I-F Carrier 41.25 MHz Color Sub Carrier 42.17 MHz	
Video Input:	1 Volt p-p, 75 Ohm 1 Volt p-p, 75 Ohm (Y) 0.7 Volt p-p, 75 Ohm, (Cb, Cr)	
Video Output:	1 Volt p-p, 75 ohm	

Audio Input:	470 mVrms, 47 k Ohm
Stereo Audio Output:	470 mVrms, 1 k Ohm
Audio Output Power:	Front – 12 watts at 10% distortion, 8 ohm Impedance Max output – 24 watts
Anode Voltage:	35.0 ± 1.5kv (contrast, brightness=max)
Brightness:	205 cd/m^2 (white screen)
Speakers:	2 Woofers - 5 inch (12 cm) round
Dimension:	50GX49B
Height (in.)	51 $^7/_8$
Width (in.)	43 $^1/_2$
Depth (in.)	23 $^3/_4$
Weight (lbs.)	185

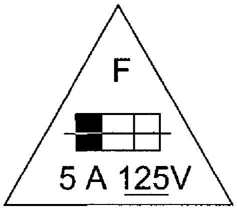
Circuit Board Assemblies:

C.P.T. (B) P.W.B.	Terminal P.W.B.
C.P.T. (G) P.W.B.	VM P.W.B.
C.P.T. (R) P.W.B.	SP Matrix P.W.B.
Signal P.W.B.	Power/Deflection P.W.B.
Signal Sub P.W.B.	Control P.W.B.

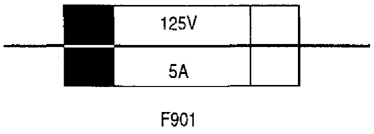
CIRCUIT PROTECTION

CAUTION: Below is an EXAMPLE only. See Replacement Parts List for details. The following symbol near the fuse indicates fast operation fuse (to be replaced). Fuse ratings appear within the symbol.

Example:



"RISK OF FIRE - REPLACE FUSE AS MARKED"



The rating of fuse F901 is 5.0A - 125V.
Replace with the same type fuse for continued protection against fire.

GENERAL INFORMATION

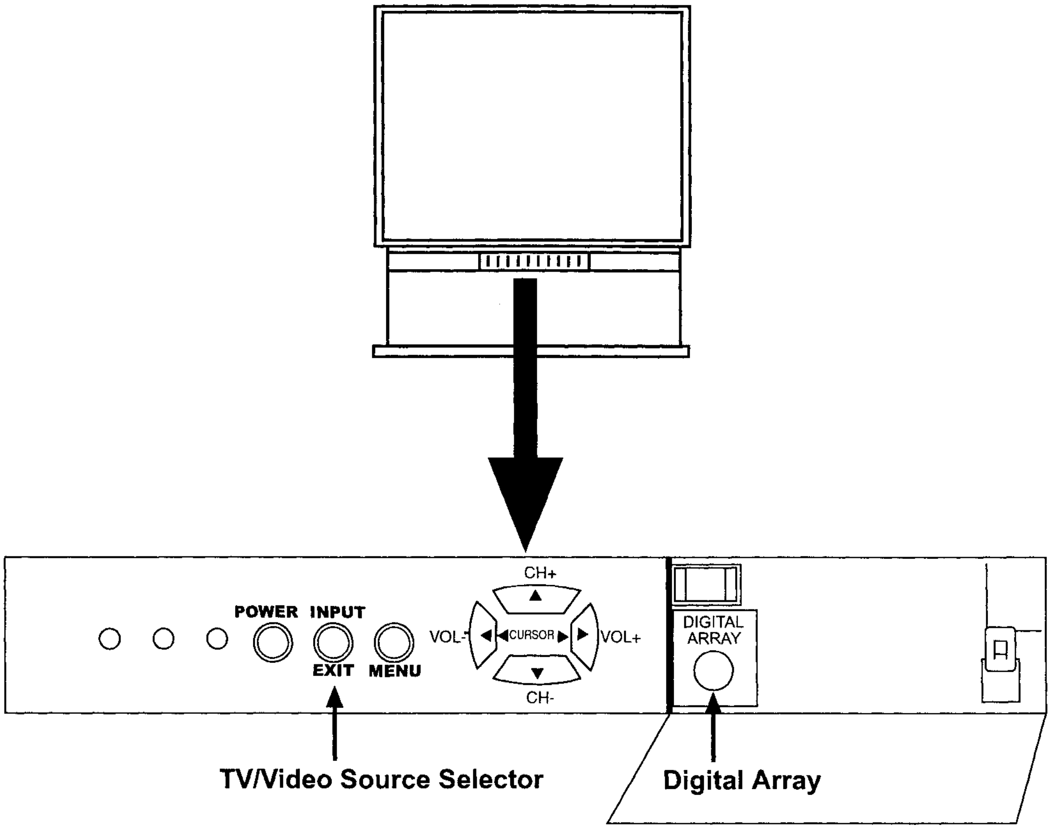

CH+
POWER
INPUT
EXIT
MENU
VOL-
CURSOR
VOL+
CH-
DIGITAL ARRAY
TV/Video Source Selector
Digital Array

Fig. 3. Control Panel

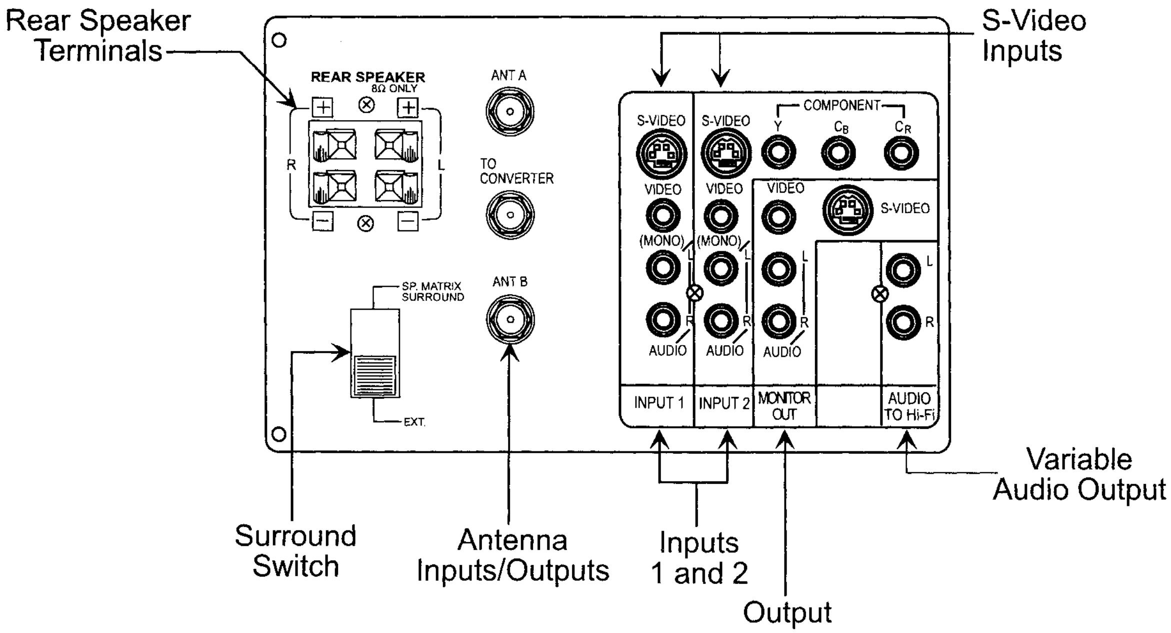
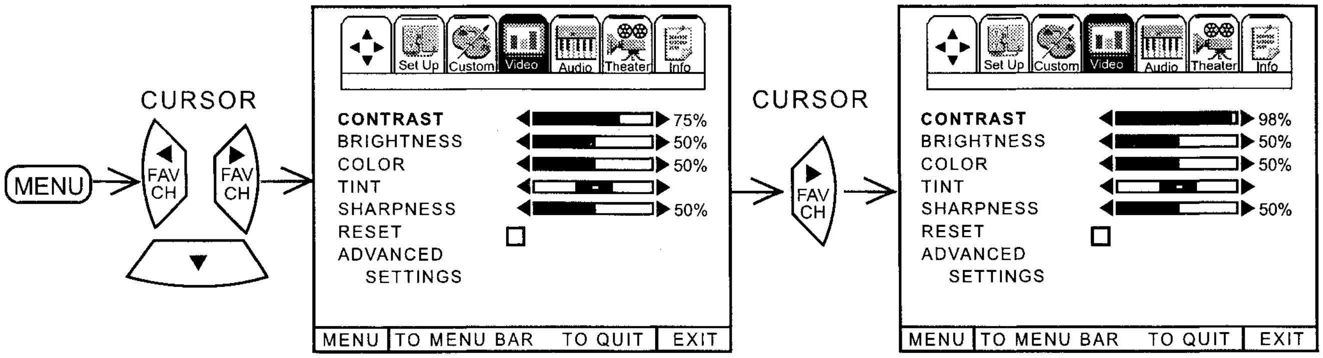

Rear Speaker Terminals
REAR SPEAKER
8Ω ONLY
R
L
ANT A
TO CONVERTER
ANT B
SP. MATRIX SURROUND
EXT.
S-VIDEO
S-VIDEO
COMPONENT
Y
CB
CR
VIDEO
VIDEO
VIDEO
S-VIDEO
(MONO)
(MONO)
L
R
AUDIO
AUDIO
AUDIO
INPUT 1
INPUT 2
MONITOR OUT
AUDIO TO Hi-Fi
S-Video Inputs
Variable Audio Output
Surround Switch
Antenna Inputs/Outputs
Inputs 1 and 2
Output

Fig. 4. Rear Connections Panel

CUSTOMIZED PICTURE AND SOUND ADJUSTMENTS

Video

Select VIDEO to adjust picture settings and improve picture quality.


CURSOR
MENU
FAV CH
FAV CH
Set Up
Custom
Video
Audio
Theater
Info
MENU
TO MENU BAR TO QUIT
EXIT
CURSOR
FAV CH
Set Up
Custom
Video
Audio
Theater
Info
MENU
TO MENU BAR TO QUIT
EXIT

CONTRAST	75%
BRIGHTNESS	50%
COLOR	50%
TINT	
SHARPNESS	50%
RESET	☐
ADVANCED SETTINGS	

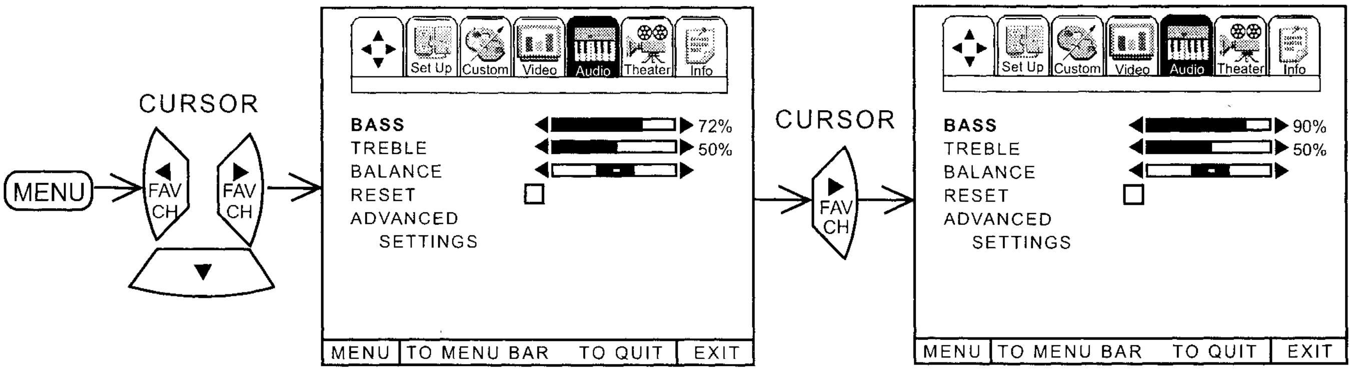
CONTRAST	98%
BRIGHTNESS	50%
COLOR	50%
TINT	
SHARPNESS	50%
RESET	☐
ADVANCED SETTINGS	

Use the CURSOR ▲ or ▼ buttons to highlight the function to be adjusted.
Press the CURSOR ◀ or ▶ buttons to adjust the function.
Press EXIT to quit menu.

NOTE:
- If CONTRAST is selected, you are adjusting CONTRAST. The additional menu items BRIGHTNESS, COLOR, TINT, and SHARPNESS can be selected and adjusted in the same manner.
- Contrast and Brightness adjustments will affect only the main picture. These adjustments will not affect the sub-picture (PIP).

CONTRAST	Use this function to change the contrast between black and white levels in the picture. This adjustment will only affect the picture when ADVANCED SETTINGS ULTRA AI is OFF.
BRIGHTNESS	Use this function to adjust overall picture brightness.
COLOR	Use this function to adjust the level of color in the picture.
TINT	Use this function to adjust flesh tones so they appear natural. (It may be necessary to adjust TINT to obtain optimum picture quality when using the COMPONENT: $Y\text{-}C_BC_R$ Input 2 jacks).
SHARPNESS	Use this function to adjust the amount of fine detail in the picture.
RESET	When RESET is selected, press CURSOR ▶ to return video adjustments to factory preset conditions.

Select AUDIO SETTINGS to adjust the TV to your preference and to improve the sound quality.


CURSOR
MENU
FAV CH
FAV CH
Set Up
Custom
Video
Audio
Theater
Info
CURSOR
FAV CH
MENU
TO MENU BAR
TO QUIT
EXIT

BASS 72%
TREBLE 50%
BALANCE
RESET ☐
ADVANCED SETTINGS

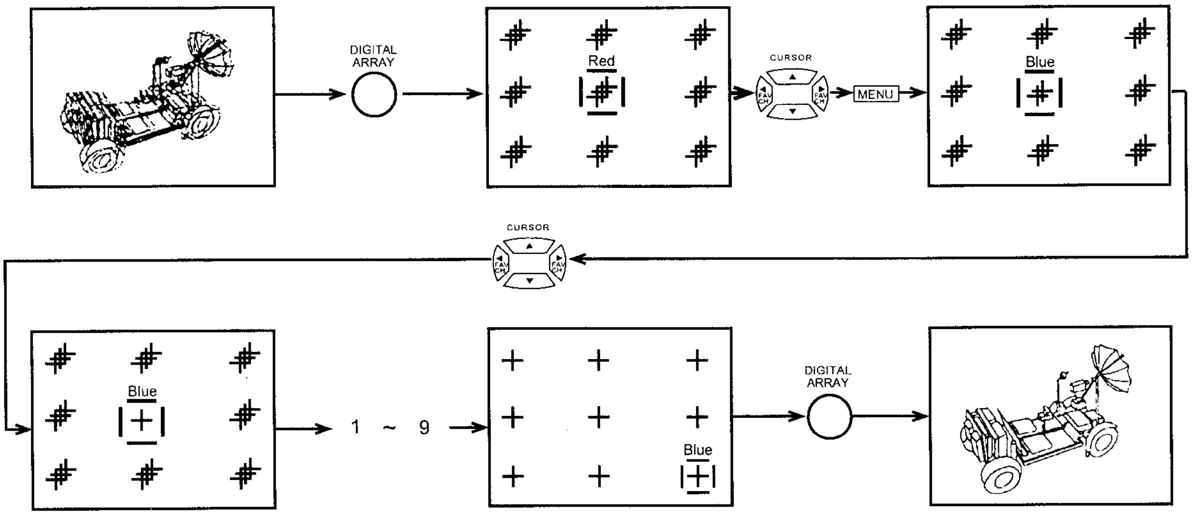
BASS 90%
TREBLE 50%
BALANCE
RESET ☐
ADVANCED SETTINGS

Use CURSOR ▲ or ▼ to highlight the function to be adjusted.
Press CURSOR ◀ or ▶ to adjust the function.
Press EXIT to quit menu.

> **NOTE:** If BASS is selected you are adjusting BASS. The additional menu items TREBLE and BALANCE can be selected and adjusted in the same manner.

BASS	This function controls the low frequency audio to all speakers.
TREBLE	This function controls the high frequency audio to all speakers.
BALANCE	This function will control the left to right balance of the TV internal speakers, the AUDIO TO HI FI output.
RESET	When RESET is selected, press CURSOR ▶ to return audio adjustments to factory preset conditions.

DIGITAL ARRAY


DIGITAL ARRAY
Red
CURSOR
MENU
Blue
CURSOR
Blue
1 ~ 9
Blue
DIGITAL ARRAY

Use the number buttons to select which point to adjust: ① - Upper Left, ② - Upper Middle, ③ - Upper Right, ④ - Center Left, ⑤ - Center, ⑥ - Center Right, ⑦ - Bottom Left, ⑧ - Bottom Middle, ⑨ - Bottom Right.

Four lines surrounding a crosshatch indicate the point being adjusted. the color of these surrounding lines indicates the color being adjusted.

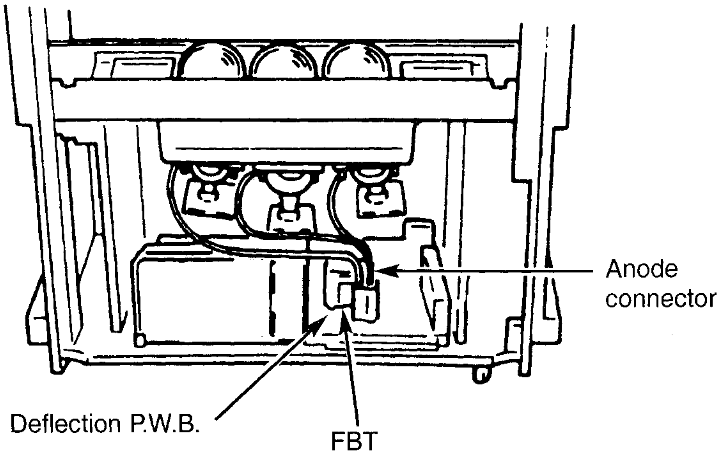
Press the CURSOR buttons to move the displayed color up, down, left or right.

Press MENU to change the color you want to adjust (Red or Blue).

Press the front panel DIGITAL ARRAY button or the remote control MOVE button when adjustment is done. This will save your adjustment into memory.

CAUTIONS WHEN CONNECTING / DISCONNECTING THE HV CONNECTOR

Perform the following when the HV connector (anode connector) is removed or inserted for CPT replacement, etc.


Anode connector
Deflection P.W.B.
FBT

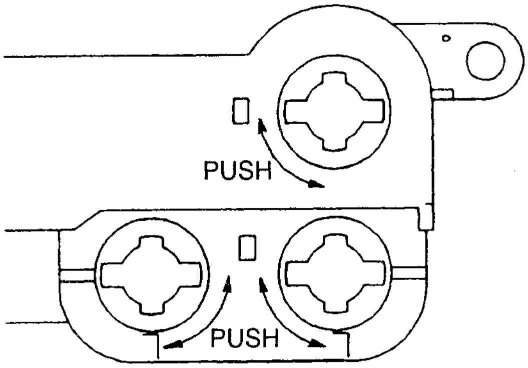


Fig. A

During Removal

1. Roll out silicon cover from FBT's contact area slowly.
2. While turning the connector about 90 degrees following the arrow (0 position), push the connector slightly towards the case. (Fig. A)
3. Remove the connector slowly by pulling it away from the case.

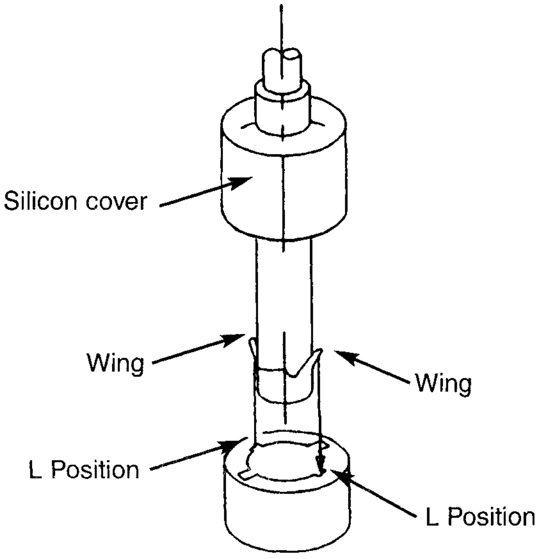

Silicon cover
Wing
Wing
L Position
L Position

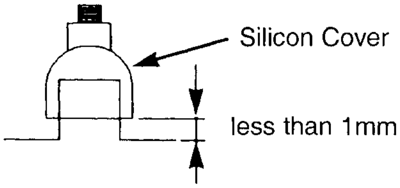
Fig. B

During Insertion

1. Please refer to direction for insertion as shown in Fig. B (L position). Insert connector until "CLICK" sound is heard.
2. Make sure the connector is pressed right in, so that it has a good contact with the spring.
3. Confirm the contact by pulling the connector slightly. (Don't pull hard because it may damage the connector).
4. Cover the high voltage output by carefully pushing silicon cover onto it. (Don't turn the connector).

(REMARK)

1. Make sure the silicon cover is covering the high voltage output.


Silicon Cover
less than 1mm

SERVICE ADJUSTMENTS

1. ASSEMBLED P.W.B. ADJUSTMENT 18
1-1. Memory Initialization 18
1-2. Comb Filter Operation Check 18
1-3. Sub Picture (PIP) Position Adjustment 18

2. FINAL ASSEMBLY ADJUSTMENT 19
2-1. Focus Adjustment 19
2-2. White Balance Adjustment 20
2-3. Sub Brightness Adjustment 20
2-4. Sub Picture White Balance Adjustment 21
2-5. SP Matrix Check 21
2-6 Raster Inclination Adjustment (Deflection Yoke) 21
2-7. Raster Position Adjustment 22
2-8. Vertical Size Adjustment (R630) 22
2-9. Horizontal Size Adjustment (R603) 23
2-10. Beam Alignment 23
2-11. Beam Shape Adjustment 23
2-12. Static Focus Adjustment 24
2-13. Blue Defocus Adjustment 24
2-14. Digital Convergence Adjustment 24
    2-14-1. Phase Adjustment (service mode) 25
    2-14-2. Raster Position Adjustment 25
    2-14-3. Convergence Point Adjustment 26
    2-14-4 Digital Convergence Remote Control 26

3. ADJUSTMENT POINT 27
3-1. CRT (R)(G)(B), Cabinet Locations 27
3-2. Main Chassis (Signal P.W.B.) 28
3-3. Main Chassis (Power/Deflection P.W.B.) 29
3-4. CPT (R)(G)(B), Focus Pack, Control P.W.B. 30

1. ASSEMBLED P.W.B. ADJUSTMENT

1.1 Memory Initialization

Adjustment procedure

(1) Press INPUT key on Control Panel and then Power On to access Video Chroma adjustment mode.

(2) Receive signal on main picture.

(3) Check the OSD according to table below, using ▲▼ buttons on Remote Control.

	P.01	AP92
	SERVICE	0
	SUB CONT	1F
	SUB COLOR	1A
	SUB TINT	40
	SUB SHARP	38
	EXT RGB BRIGHT	40
	EXT RGB CONT	60
	BRIGHTNESS	80
✱	SUB BRIGHT ADJ. ☐	
	INITIAL SET ☐	

P.02	AP92
G DRIVE GAIN	47
B DRIVE GAIN	3A
H POSITION	12
AFC G	0
H BLK END PHASE	0
V BLK PHASE	0
V FREQUENCY	1
V POSITION	0
R-Y POSITION	3
R-Y LEVEL	0
G-Y LEVEL	0
GPPHS	1

P.03	AP92
S-TRAC	1
YA	0
Y DL	0
TXACL	1
COLOR A	0
CTL	0
CDE	1
C TRAP	0
TOF FQ	0
TOF Q	0
COLOR SYSTEM	0
DY GAIN	9

P.04	AP92
DC T.C. POINT	0
DC T.C. RATIO	0
DC T.C. LIMIT	0
B.E P. LIMIT	0
B.E. P. POINT1	5
B.E. P. POINT2	0
B.L.S.	0
B.L.C.	1
B.S.G.	0
B.D.L.	0
BEARE	0
DC GAIN	6

P.05	AP92
WPDL	1
HI BRT	1
OSACL	0
APACON PEAK FO	0
WHITE PEAK	0
D. ABL POINT	0
D. ABL GAIN	7
ABL POINT	5
ABL GAIN	6
(BLANK)	(00)
VAPINV	0B
VAPGAIN	5

P.06	AP92	
H POSI (CENT)	04	✱
V POSI (CENT)	07	✱
H DLY OSD	A	
V POSI (CENT)	5	
1 ST L AFTER V	29	
H DLY VBI	2	
VIDEO FIELD	1	
CLAMP DELAY	34	
INITIAL SET ☐	-	

✱: Adjustable data
Others: Fixed data (be careful not to change)

(4) Press MENU key to exit VIDEO CHROMA ADJUST mode.

NOTE: (1) If there is a different value than shown in table above, for fixed data, adjust it using ◀ ▶ buttons (only in this case).

(2) When exchanging microprocessor and TV is turned on for first time, it requires initialization of VIDEO CHROMA ADJ on P1 and P6.

(3) Should be changed to OFF for FIRST TIME TOUR at first Power ON by pressing MENU key during FIRST TIME TOUR running.

1.2 Comb filter operation check

Adjustment preparation

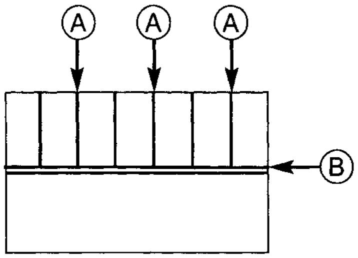
(1) Receive the color bar signal at the regular tuning point.

(2) Set the CONTRAST control to MAX and the other controls to center.

(3) Set the AI to OFF.

Adjustment procedure

(1) Check that between the color bars there are line dots every second color bar as shown in the drawing.



Check Ⓐ and Ⓑ line dots.

LINE	DOTS
Ⓐ	X
Ⓑ	None

1.3 Sub-picture (PIP) position adjustment

Adjustment preparation

(1) Select signal on main picture.

(2) Video settings have to be at normal condition.

Adjustment procedure

(1) Press the INPUT and POWER button on Control Panel at same time to access VIDEO CHROMA ADJUST mode.

(2) Select H POSI and V POSI using ▲▼ buttons.

(3) Adjust the H POSI (HORIZONTAL) and V POSI (VERTICAL) position using ◀ ▶ buttons.

(4) Press MENU button to exit VIDEO CHROMA ADJUST mode.

(5) Select single PINP mode and move the sub picture, using the MOVE button. Distance between PINP and edge of screen should be equal when moved. If it is not, repeat (1) ~ (5).

NOTE: Check the position of MULTI PINP mode. Check the right edge of the sub pictures for MV-4 to make sure there is no separation between the MULTI PINP and the edge of the screen.

2. FINAL ASSEMBLY ADJUSTMENT

2.1 Focus adjustment

Adjustment preparation

(1) The set can face in any direction: west, east, north or south.

(2) Receive the cross-hatch pattern signal.
CONTRAST : HALF
BRIGHTNESS : MINIMUM

(3) The electrical focus adjustment should have been completed.

(4) The centering DY inclination should have been adjusted.

Adjustment procedure

(1) Loosen the fixing screw on the lens cylinder so that the lens cylinder can be turned. (Be careful not to loosen too much. If it is loosened too much, rattling when tightening becomes greater and the focus may drift). After completing steps (5), (6) and (7) below, tighten the fixing screws for each lens with a torque of 12~17 Kgf cm.

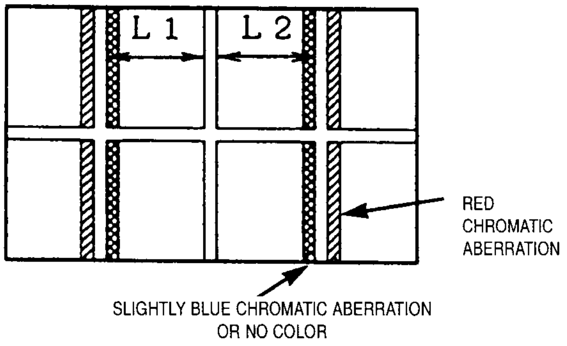
(2) Apply covers to 2 of R, G and B lenses, and project a single color on the screen and adjust in sequence.
(The adjustment order of R, G and B is only an example.)

(3) For each of the R, G and B lenses, observe the color abberation generated on the outer circumference of the cross-hatch bright line at the center section ±3 pitches vertically and horizontally from the center.

(4) If the lens adjustment knob is turned clockwise, viewed from the front, the color aberration changes as follows.

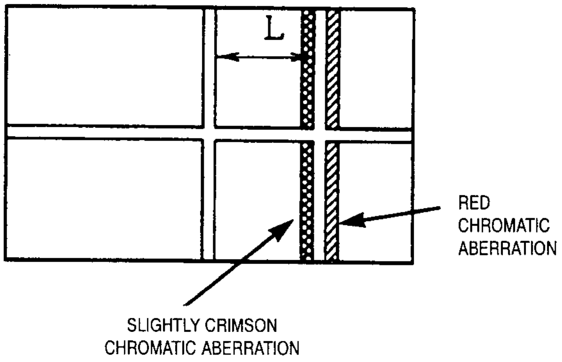
Lens	Change of color aberration
R lens	Red → Crimson
G lens	Blue → Red
B lens	Purple → Green

(5) In case of G lens, set to the point where the chromatic aberration switches from blue to red. If the chromatic aberration appearing all over the screen is not the same, observe the vertical bright line at the center of the screen and set to the position where red chromatic aberration slightly appears inside and blue outside (reference value: 1~3mm) within the cross-hatch pitches specified in next table. When the red chromatic aberration appearing at both sides of the bright line is not equal, observe the side with larger chromatic aberration when adjusting.



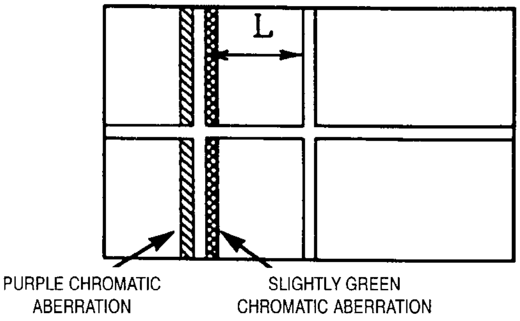
Set Size	Pitch between L1 & L2
50"	3.0 cross-hatch pitches

(6) In case of R lens, set to the position where the chromatic aberration changes from red to crimson. As shown below, observe the vertical bright line at the center and set to the position where the crimson chromatic aberration slightly appears inside and red outside (reference value: 1~3mm) within the cross-hatch pitches specified in next table.



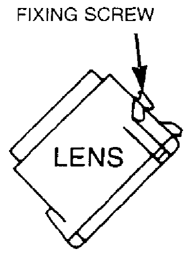
Set Size	Pitch between L
50"	3.0 cross-hatch pitches

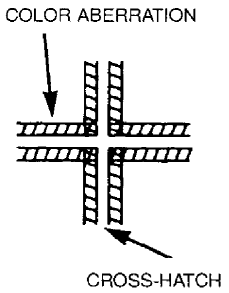
(7) In case of B lens, set to the position where the chromatic aberration changes from purple to green. As shown below, observe the vertical bright line at the center and set to the position where green chromatic aberration slightly appears inside and purple outside (reference value: 1~3mm) within the cross-hatch pitches specified in next table.



Set Size	Pitch between L
50"	3.0 cross-hatch pitches

Notes: (1) Fixing screw (2) Color aberration





(3) Since the G light is very important for picture quality and performance, pay special attention in its adjustment.

Note: Be careful not to touch the lens with your fingers when adjusting.

(4) For red, setting to the center between red and crimson is optimum.

(5) For blue, setting to the center between purple and green is optimum.

2.2 White balance adjustment

(1) Screen adjustment
(2) High brightness white balance.
(3) Low brightness balance.

Screen adjustment VRs	Drive adjustment VRs
Red: on FOCUS PACK	Red: R873 on CPT P.W.B.
Green: on FOCUS PACK	Green: R843 on CPT P.W.B.
Blue: on FOCUS PACK	

Adjustment preparation

(1) Start adjustment 20 minutes or more after the power is turned on.
(2) The vertical incident illumination on the screen should be 20 lux or less.
(3) Set the video settings (CONTRAST: MAX, others: center) to standard condition.
(4) For low brightness white balance adjustment, input a white raster signal level of 0.145 Vp-p (Video input level).
(5) For high brightness white balance adjustment, input a white raster signal level of 0.715Vp-p (Video input level).
(6) Set the drive adjustment VRs (red and green) to 12 - 2 o'clock position.
(7) Turn the screen adjustment VRs (red, green and blue) fully counterclockwise.
(8) Set video advanced setting white control to COOL position.

Adjustment procedure

(1) Go to VIDEO CHROMA ADJUST mode by pressing INPUT and Power button on Control Panel at the same time.
(2) In "SERVICE" mode push ▶ button and screen turns to black. Gradually turn the screen adjustment VRs (red, green, blue) clockwise and set them where the red, green and blue slightly bright lines just appear evenly on the screen.
(3) Push the ▶ button again to return to "Normal" side.
(4) Press "MENU" button to exit VIDEO CHROMA ADJUST.
(5) Select the input signal for high brightness (Video level = 0.715Vpp).
(6) Adjust the high brightness white balance using the drive adjustment VRs (red, green).
(7) Select the signal for low brightness (Video level = 0.145Vpp)
(8) Adjust the low brightness white balance using the screen adjustment VRs (red, green, blue). (Visually adjust).
(9) Check that high brightness white balance is obtained. If it does not, return to step (7).

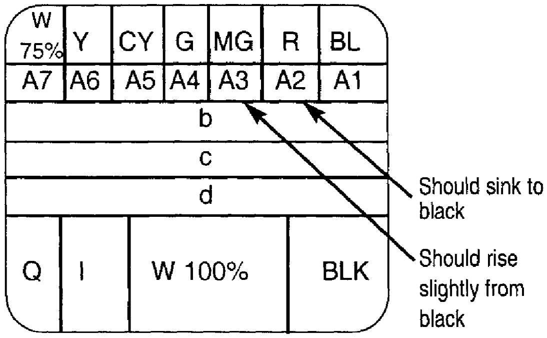
NOTE: Before adjusting the White Balance, check that the screen adjustment VRs are turned fully counterclockwise. Since the phosphorescent surface of the CRT is likely to be burned, be careful.

White balance = 9300° K ± 0MPCD
Color coordinate = x 0.285
y 0.295

2.3 Sub brightness adjustment

Adjustment preparation

(1) Start adjustment 20 minutes or more after the power is turned ON. Receive the color bar signal.
(2) Set the contrast and color controls to minimum.
(3) The vertical incident illumination on the screen should be 20 lux or less.



Adjustment procedure

(1) Go to "Sub Brightness" adjustment in VIDEO CHROMA ADJUST mode (press Input and Power button on Control panel at same time), using ▲ ▼ buttons and then ▶ button.
(2) Then adjust "Sub Brightness" using ◀ ▶ buttons to increase or decrease the value, according to figure. (Visually adjust).
(3) After adjustment, press MENU button to exit VIDEO CHROMA ADJUST mode. (Data is stored in memory).

Note: When selecting SUB-BRIGHTNESS mode the microprocessor sets the CONTRAST and COLOR to MIN. automatically, but make sure that the other conditions are center. Directly observe the screen by eye without using a mirror.

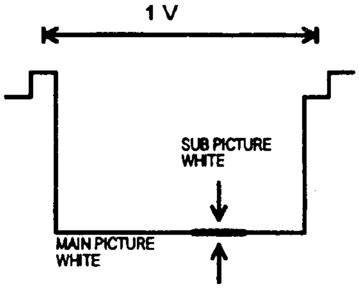
2.4 Sub picture white balance adjustment (R0M4, R0M6, R0M8)

Adjustment preparation

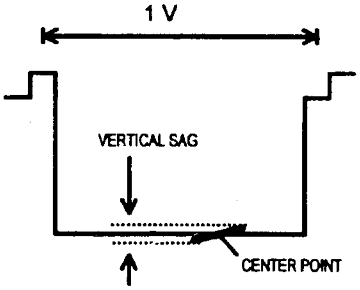
1. Start adjustment after power is ON for 20 minutes.
2. Use a white raster signal for adjustment.
3. Press "FREEZE" on the remote control and select "SINGLE" freeze mode to display the sub picture.
4. Set CONTRAST to Maximum, Other conditions to center.

Adjustment procedure

1. Connect oscilloscope to P802 and adjust R0M8 to match blue level of main and sub pictures.
2. Repeat for P832 and R0M6 Green, P862 and R0M4 for Red.



Note: If the sub picture has a signal sag, adjust level at center point.



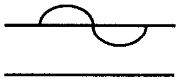
2.5 SP Matrix Check

Adjustment preparation

1. Input the following audio signals to the audio input of the VIDEO INPUT terminals, when checking SP Matrix:

① R ch: 435mVrms

② L ch: no signal



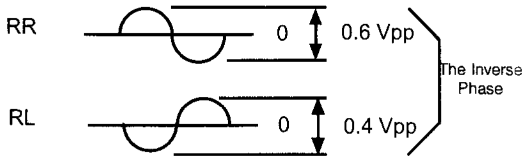
- Set the AUDIO ADVANCED SETTING for INT. SPEAKERS: ON, LOUDNESS: OFF and PERFECT VOLUME: OFF.
- Set the volume control of FRONT to 20 step.
- Set the BALANCE, TREBLE and BASS to Normal.

Note: Front waveform: front speaker output of the set.

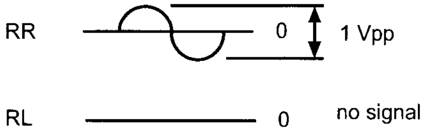
Adjustment procedure

1. Check that the waveforms shown below are obtained (Input signal ① and ②), at rear SP Terminal Out.

(a) SP MATRIX mode



(b) EXT mode



2.6 Raster Inclination adjustment (Deflection Yoke)

Adjustment preparation

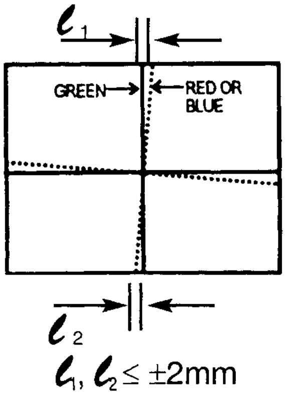
1. The set can face east or west.
2. Input the single cross test signal.
3. Set video conditions to factory reset.
4. The lens focus adjustment should have been completed.
5. The electric focus should have been coarse adjusted.
6. The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.
7. Start adjustment 20 minutes or more after TV is turned on.

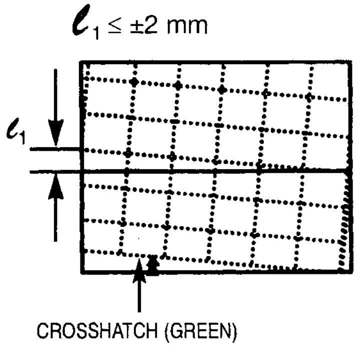
Adjustment procedure

1. Apply covers to the R and B lenses and project only green light.
2. Turn the G deflection yoke and adjust the vertical raster inclination.
3. Then, remove the cover of R or B lens and project red or blue light and green light together on the screen.

(4) Turn the deflection yoke of R or B and set so that the inclination of R or B with respect to the green light is as shown below on the top and bottom sides.

(5) After raster inclination adjustment, fixing screw of DY should be screwed with 12±2kg-cm torque.





Notes: (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again, on POWER/DEFLECTION PWB.

(2) To restore old RAM data, turn TV off and on.

2.7 Raster position adjustment

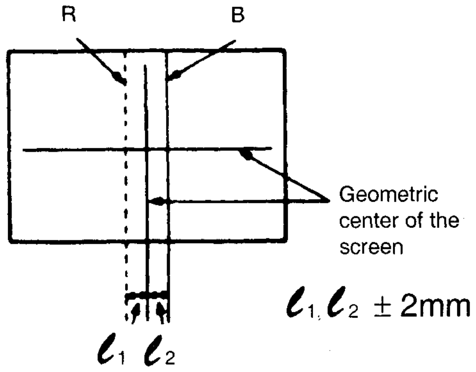
Adjustment preparation

(1) The set can face east or west.
(2) Input the single cross test signal.
(3) Set video conditions to factory reset.
(4) The lens focus adjustment should have been completed.
(5) The electric focus should have been coarse adjusted.
(6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.
(7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

(1) Turn the centering magnets for red, green, and blue to satisfy the condition below. The red and blue horizontal lines should match with green.

Size	ℓ_1 (RED)	ℓ_2 (BLUE)
50"	10mm	30mm



NOTES: (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again.

(2) To restore old RAM data, turn TV off and on.

2.8 Vertical size adjustment (R630)

Adjustment preparation

(1) The set can face east or west.
(2) Input the single cross test signal.
(3) Set video conditions to factory reset.
(4) The lens focus adjustment should have been completed.
(5) The electric focus should have been coarse adjusted.
(6) The digital convergence RAM should be cleared (uncorrected state) . With the TV set off, press and hold the service switch located on the POWER/DEFLECTION PWB and then press the power button.
(7) Start adjustment 20 minutes or more after TV is turned on.

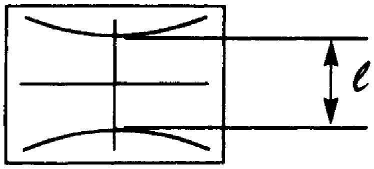
Adjustment procedure

(1) Turn only the green by applying covers to the red and blue lens or shorting the 2 pin TS connectors on the red and blue CPT P.W.B.
(2) Count the vertical lines of the DCU cross hatch. If the number of vertical lines is 9, go to step (3). If the number of vertical lines is 8, push "HELP" key and then "5" key on the R/C so the number of vertical lines becomes "9".
(3) Turn vertical amplitude adjustment VR (R630) so that the distance between the top and bottom horizontal lines is equal to the size shown in the table.

Size	ℓ
50"	650 ± 5mm

Note: (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again (on POWER/DEFLECTION PWB).

(2) To restore old RAM data, turn TV off and on.

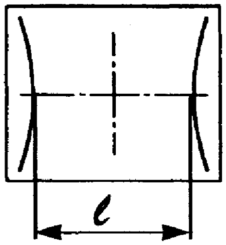


2.9 Horizontal size adjustment (R603)

Adjustment preparation
(1) The set can face east or west.
(2) Input the single cross test signal.
(3) Set video conditions to factory reset.
(4) The lens focus adjustment should have been completed.
(5) The electric focus should have been coarse adjusted.
(6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the POWER/DEFLECTION PWB and then press the power button.
(7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure
(1) Project only green, the same as Vertical size adjustment.
(2) Turn horizontal amplitude adjustment VR (R603) so distance between the left and right vertical lines is equal to the size shown in the table.

Size	ℓ
50"	950 ± 5mm

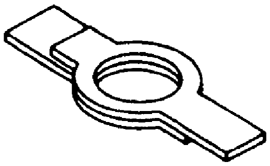


Note: (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again.
(2) To restore old RAM data, turn TV off and on.

2.10 Beam alignment

Adjustment preparation
(1) Adjust at least 30 minutes after turning on power switch.
(2) Raster inclination, centering, horizontal and vertical amplitudes and optical focus adjustment should be completed.
(3) Set video conditions to factory reset.
(4) Receive cross-hatch signals. (Use of internal cross-hatch signals allowed.)
(5) Short-circuit all metal parts (metal fittings, centering magnet) installed on the projection tubes to GND's of the projection tubes.
Since metal parts are charged with electricity, shocks may be caused if they are not short circuited.

Adjustment procedure
(1) Green (G) tube beam alignment adjustment. Short-circuit 2P subminiature connector plug pins of Red (R) and Blue (B) on the CPT boards and project only Green (G) tube.
(2) Put Green (G) tube beam alignment magnet to the cancel state as shown below.

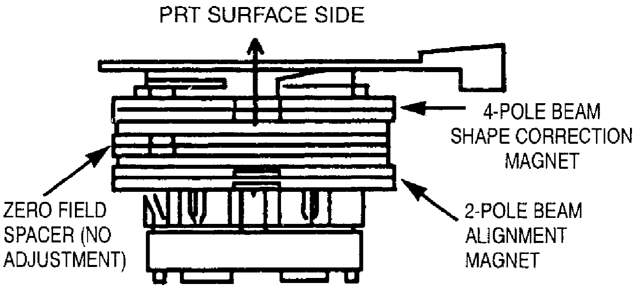


(3) Turn the Green (G) static focus (Focus Pack) counterclockwise all the way and make sure of position of cross-hatch center on screen. (Halo state.)
(4) Turn the Green (G) static focus (Focus Pack) clockwise all the way. (Blooming state.)
(5) Turn two magnets forming alignment magnet in any desired direction and move cross-hatch center to position found in (3).
(6) If image position does not shift when Green (G) static focus (Focus Pack) is turned. Green (G) beam alignment has been completed.
(7) If image position shifts when Green (G) static focus (Focus Pack) is turned, repeat (2)-(6).
(8) Conduct beam alignment for red (R) focus: Focus Pack UFPK, Blue (B) focus: Focus Pack UFPK.
(9) Upon completion of adjustment, fix beam alignment magnets with white paint.

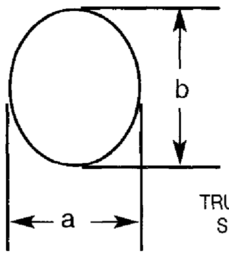
2.11 Beam shape adjustment

Adjustment preparation
(1) The beam alignment should have been completed.
(2) The raster inclination, centering, horizontal/ vertical amplitude and optical focus adjustments should have been completed.
(3) Set video conditions to factory reset.
(4) Input the dot signal.

Adjustment procedure
(1) Green PRT beam shape adjustment. Short-circuit 2P sub-mini connectors on Red and Blue CPT P.W.B.s to project only the Green beam.
(2) Turn the green static focus fully clockwise. (Blooming.)
(3) Make the dot at the screen center a true circle using the 4-pole magnet as shown below.
(4) Also adjust the Red and Blue PRT beam shapes according to the steps (1) to (3).
(5) After the adjustment has been completed, return R, G and B static VRs to the just focus point.


PRT SURFACE SIDE
4-POLE BEAM SHAPE CORRECTION MAGNET
ZERO FIELD SPACER (NO ADJUSTMENT)
2-POLE BEAM ALIGNMENT MAGNET

TRUE CIRCLE SPECIFICATION



TRUE CIRCLE DEGREE: a/b
SPECIFICATION: 0.9-1.1

2.12 Static focus adjustment

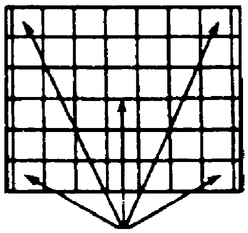
Adjustment preparation

(1) The raster inclination, centering, horizontal/vertical amplitude and optical/electrical focus beam alignment should have been adjusted.
(2) The static convergence data should be cleared.
(3) Set video conditions to factory reset.
(4) Receive the cross-hatch pattern signal.
(5) Apply covers to the lenses of colors other than the color to be adjusted and project a single color.

Adjustment procedure

(1) Red (R), Green (G) and Blue (B) static focus adjustment. Vary the static focus VR (focus pack UFPK) and make the center of the cross-hatch pattern clearest.
(2) Observe the corners of the picture and check that the focus does not get conspicuously worse.

OBSERVING POINTS OF THE CORNER OF THE PICTURE



OBSERVING POINTS

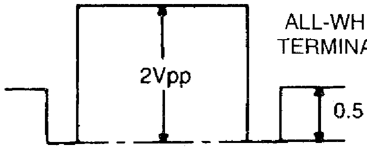
2.13 Blue defocus adjustment

Adjustment Preparation

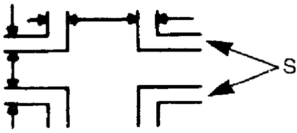
(1) Optical and electrical focus adjustment should have been completed.
(2) The convergence adjustment should have been completed.
(3) Set Video conditions to factory reset.

Adjustment procedure

(1) Input an all-white signal shown below to VIDEO input.
(2) Short-circuit 2P sub-mini connectors on the red and green CPT P.W.Bs. to display only the blue beam.
(3) Turn the B Focus VR (Focus Pack) fully clockwise.
(4) Measure the brightness at the center of the screen and turn the B FOCUS VR (Focus Pack) counterclockwise to adjust the brightness of blue as shown in Table.
(5) After the adjustment is completed, if blue exceeds the specification, turn and adjust focus so that the sticking out part of blue satisfies the specification.



ALL-WHITE SIGNAL WAVEFORM
TERMINATION CONDITION: OPEN



Defocus sticking out specification

Screen Size	Blue sticking out
50"	1.0mm

Condition: User controls are set to the initial set positions (for shipment) Measuring point Screen center.

Cautions: Correct the brightness gauge and amplitude of the all-white signal periodically. The aperture angle of the brightness gauge is 1°.

Use a cross-hatch pattern to check.

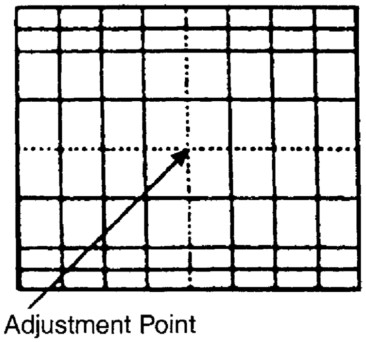
2.14 Digital convergence adjustment

Adjustment preparation

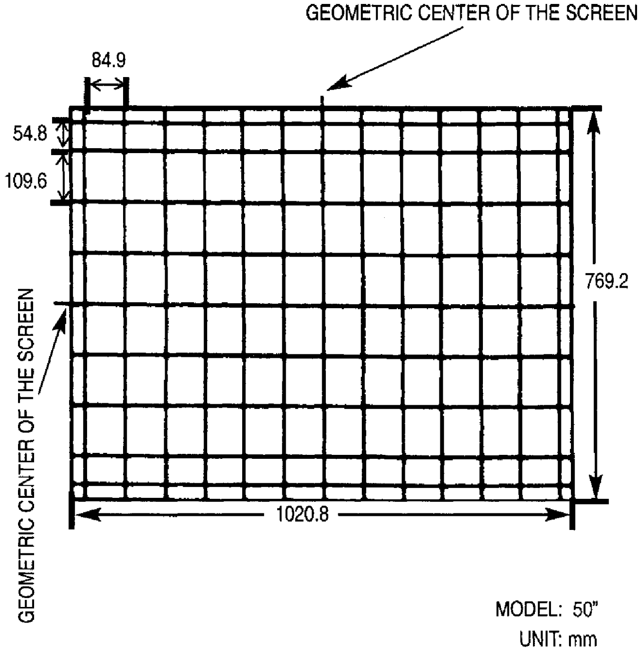
(1) Receive an RF or video signal.
(2) Set controls to factory preset.
(3) Install jig screen on the set.
(4) Note the center of the video pattern displayed. This is necessary to match dotted lines (adjustment point viewed) and actual point that is adjusted and displayed by the video signal.

(5) Press the service only switch (on POWER/DEFLECTION PWB). The pattern displayed is now the digital convergence mode.

(6) When performing a complete digital convergence adjustment CLEAR DATA in RAM. See 2.6. (1) - (7).


Adjustment Point

JIG SCREEN SPECIFICATION


GEOMETRIC CENTER OF THE SCREEN
84.9
54.8
109.6
769.2
1020.8
GEOMETRIC CENTER OF THE SCREEN
MODEL: 50"
UNIT: mm

Note: If only minor adjustments to convergence are needed, the jig screen is not necessary. Use digital data stored in memory and one color as a reference (red, green, or blue). DO NOT CLEAR DATA and WRITE to ROM memory.

2.14.1 Phase adjustment (service mode)

Adjustment preparation

(1) PHASE adjustment - This is to match the digital convergence cursor position to the video image displayed, and to match the digital convergence cursor position (dotted lines) to digital convergence data position (bent lines).

Adjustment procedure

(1) Press the HELP button on the remote to select phase adjustment. (Only Green displayed).

(2) Identify the bent lines and use the cursor buttons to move the dotted lines in between as shown.

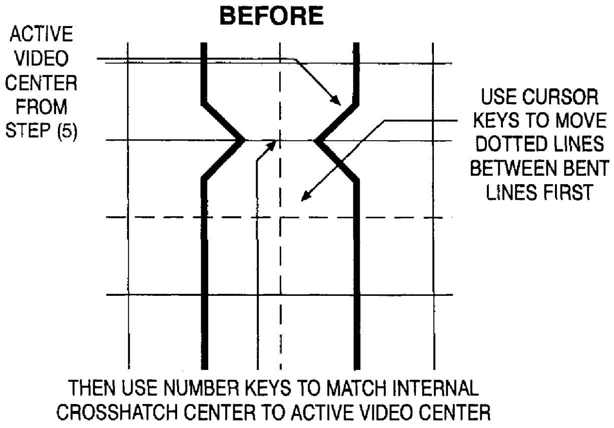
(3) Press HELP to exit PHASE mode.

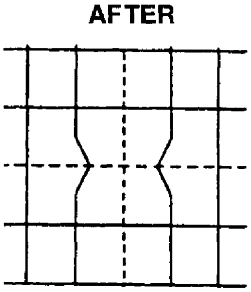
(4) Press EXIT 5 times to display external signal.

(5) Identify center of active video, then press EXIT 5 times to return to internal cross-hatch.

(6) Press HELP (phase adj.), and use 2, 4, 5 and 6 to position internal cross-hatch center on active video center identified in step (5).

(7) Press HELP to exit PHASE mode.


BEFORE
ACTIVE VIDEO CENTER FROM STEP (5)
USE CURSOR KEYS TO MOVE DOTTED LINES BETWEEN BENT LINES FIRST
THEN USE NUMBER KEYS TO MATCH INTERNAL CROSSHATCH CENTER TO ACTIVE VIDEO CENTER



2.14.2 Raster position adjustment

Adjustment preparation

(1) Position adjustment - This will move an entire color. Use this adjustment to match colors at the center of the screen. (Active video center from external signal and physical screen center should now match from phase adj. 2.15.1.).

(2) Use the buttons below to switch color to adjust.
"RECALL" - Green
"0" - Red
"INPUT" - Blue

Adjustment procedure

(1) Press the FRZ button. Extra horizontal lines appear to confirm raster position mode.

(2) Use the cursor buttons to adjust position.

(3) Press FRZ again to exit raster position mode.

Notes: (1) Other functions cannot be accessed when in raster position adjustment mode. Press FRZ and confirm extra horizontal lines disappear to exit raster position mode.

(2) Press MENU to switch between all colors displayed or adjustment color and Green only.

2.14.3 Convergence point adjustment

Adjustment preparation

(1) Select color to adjust.
"RECALL" - Green
"0" - Red
"INPUT" - Blue

(2) Use 4, 6, 2, and 5 to move the cursor position (dotted lines).

(3) Use cursor buttons to move the convergence point.

(4) Three adjustment modes are available:
1. (3x3) Press "RECALL" 5 times
2. (7x5) Press "0" 5 times
3. (13x9) Press "INPUT" 5 times

NOTE: 3 x 3 mode can only be accessed at start of adjustment from clear data in ram adj. mode.

For touch-up, only the (13x9) mode is necessary. This will adjust every cross-hatch intersection point on the screen.

For complete adjustment, start with (3x3) mode. This will adjust center point and eight edge points only, but will greatly reduce adjustment time. Then use (7x5) mode, and finally (13x9) mode to finish convergence.

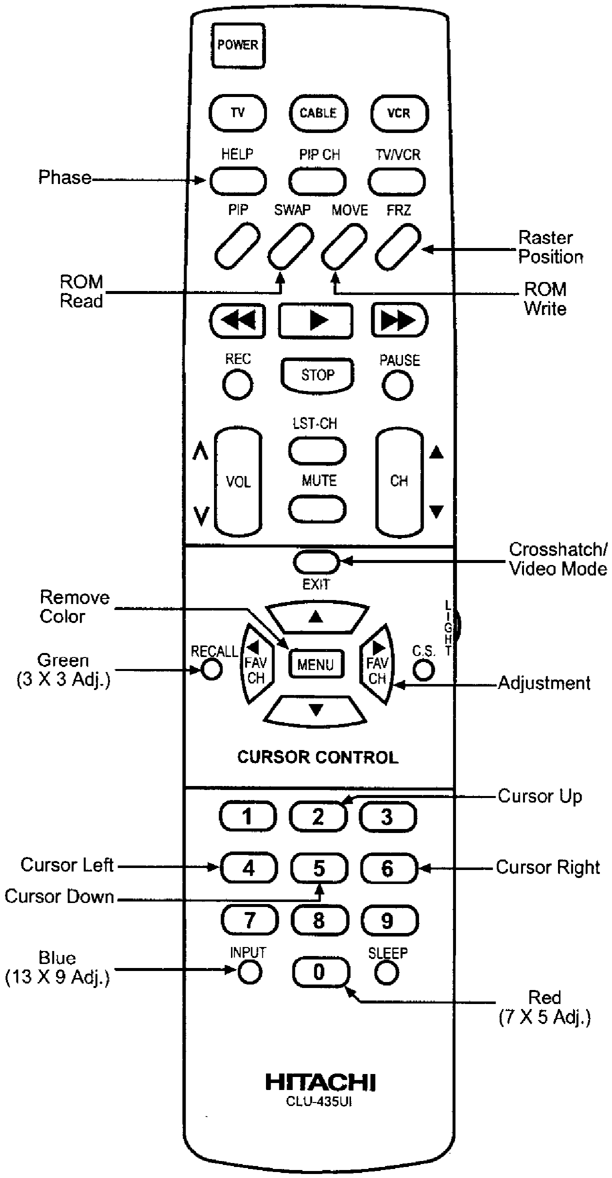
If "S" distortion appears between cross-hatch lines repeat (7x5) mode to change calculation process while adjusting to remove distortion, then return to (13x9) mode to finish touch-up convergence.

Adjustment procedure

(1) Start adjustment at the center of the screen.
(2) Continue adjustment at next closest position.
(3) Adjust center area first, ending with edge sections.
(4) When convergence is acceptable, press MOVE to write data to ROM memory. ROM WRITE? is displayed to alarm system that ROM will be overwritten with new data. Press the MOVE button again to write displayed data to ROM.
(5) DATA WRITE TO ROM will take approximately 20 seconds and no picture will be displayed.
(6) Green dots will be displayed when operation is complete.
(7) Press MUTE to return to convergence pattern, then confirm again convergence is acceptable.

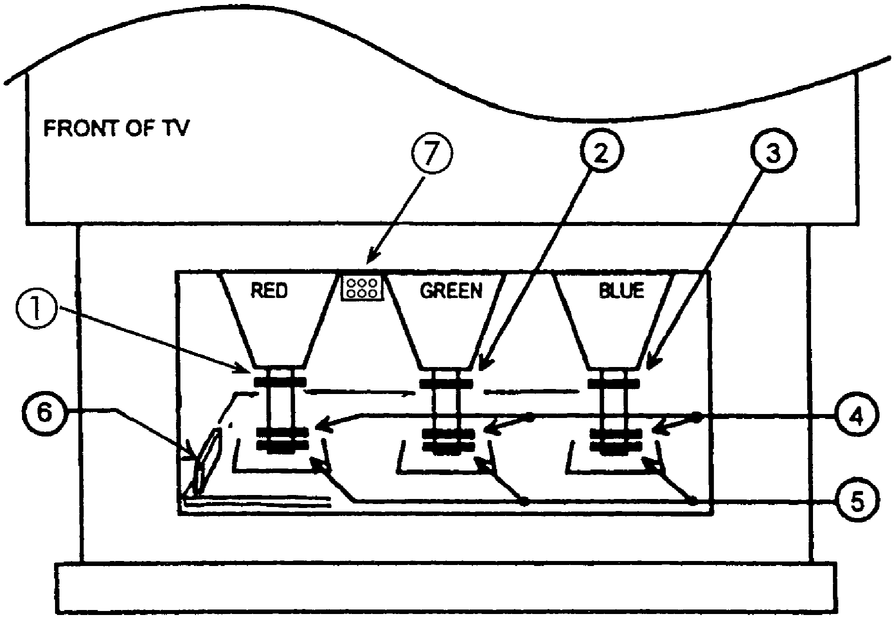
Notes: (1) Display only green for easier adjustment and match to jig screen. Press "MENU", THEN PRESS "RECALL".
(2) Write data to ROM after green adjustment. Once green has been confirmed to match jig screen, the jig screen can be removed. Do not readjust the green color after jig screen has been removed. This is now your reference color.
(3) Display green and red only and match red to green.
(4) Display all colors and match blue to green and red. Touch-up red color if necessary.
(5) Existing DATA in ROM can be read by pressing the SWAP button 2 times. This data can be used after replacing a component (CRT, DY, etc.) Where complete convergence adjustment is not necessary be careful not to overwrite this data.
DO NOT write cleared RAM data into ROM or a complete convergence adjustment will be necessary.

2.14.4 Digital Convergence Remote Control


POWER
TV
CABLE
VCR
HELP
PIP CH
TV/VCR
Phase
PIP
SWAP
MOVE
FRZ
Raster Position
ROM Read
ROM Write
REC
STOP
PAUSE
LST-CH
VOL
MUTE
CH
Crosshatch/ Video Mode
EXIT
Remove Color
LIGHT
RECALL
FAV CH
MENU
FAV CH
C.S.
Green (3 X 3 Adj.)
Adjustment
CURSOR CONTROL
Cursor Up
1
2
3
Cursor Left
4
5
6
Cursor Right
Cursor Down
7
8
9
INPUT
SLEEP
Blue (13 X 9 Adj.)
0
Red (7 X 5 Adj.)
HITACHI
CLU-435UI

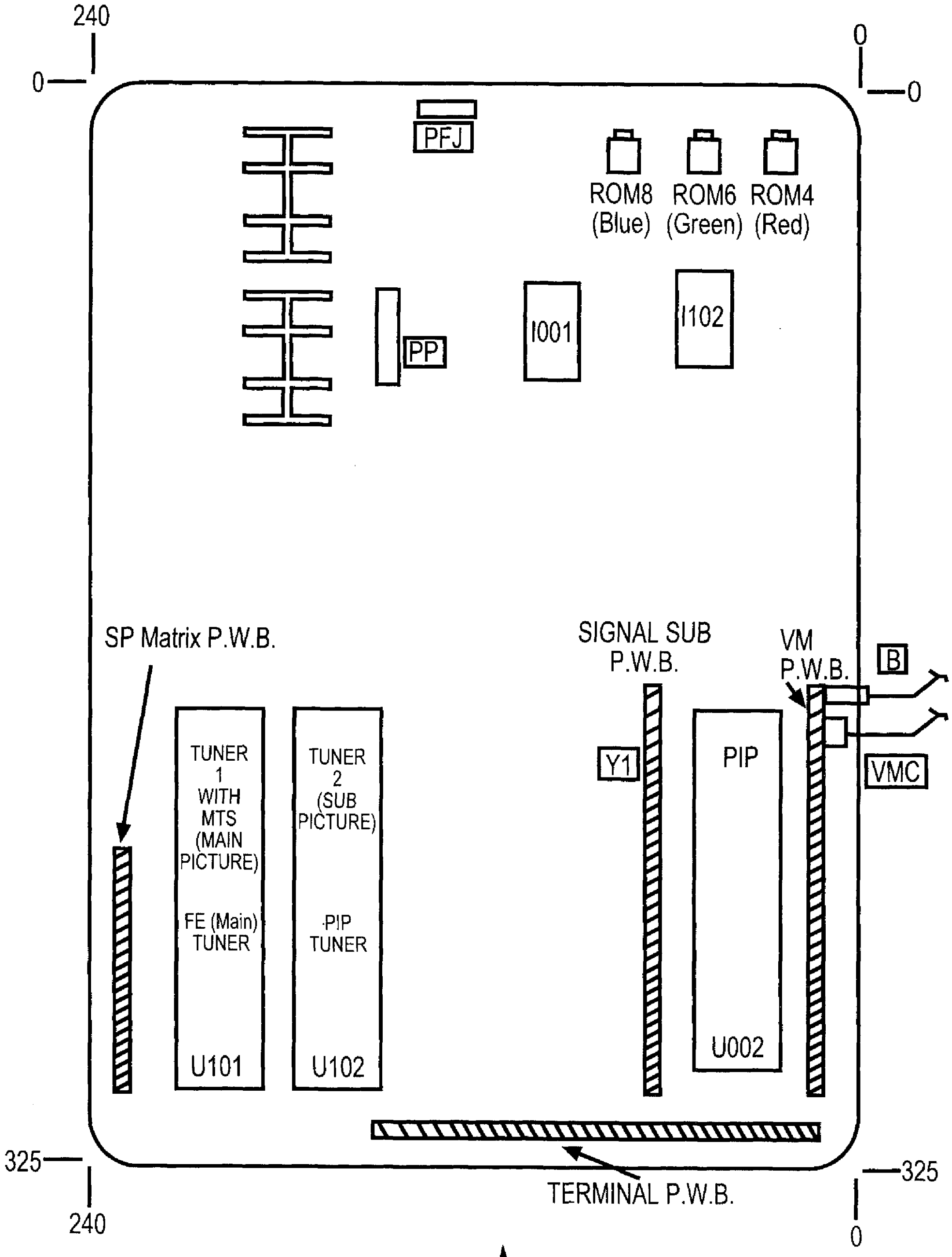
3. ADJUSTMENT POINT

3.1 CRT, cabinet locations



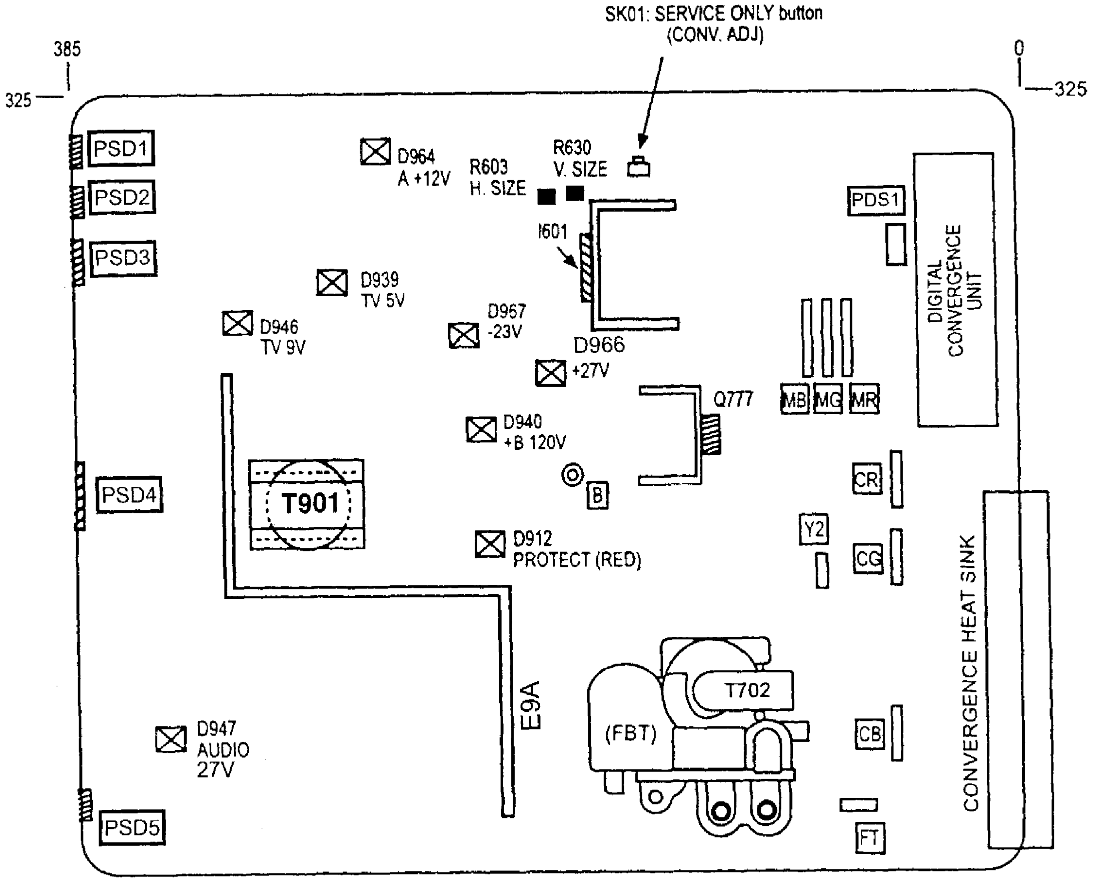
1. CENTERING MAGNET FOR RED PRT
2. CENTERING MAGNET FOR GREEN PRT
3. CENTERING MAGNET FOR BLUE PRT
4. 4-POLE MAGNET FOR BEAM FORM ADJUSTMENT
5. BEAM ALIGNMENT MAGNET
6. DIGITAL CONVERGENCE MODULE (On Power/Deflection Board)
7. FOCUS PACK (Top Adjustments for SCREEN, Bottom for FOCUS)

3.2 MAIN CHASSIS
(Signal P.W.B.)


240
0
0
0
PFJ
ROM8 (Blue)
ROM6 (Green)
ROM4 (Red)
PP
I001
I102
SP Matrix P.W.B.
TUNER 1 WITH MTS (MAIN PICTURE)
FE (Main) TUNER
U101
TUNER 2 (SUB PICTURE)
PIP TUNER
U102
SIGNAL SUB P.W.B.
Y1
PIP
U002
VM P.W.B.
B
VMC
TERMINAL P.W.B.
325
240
325
0

Rear View

3.3 MAIN CHASSIS
(Power/Deflection P.W.B.)

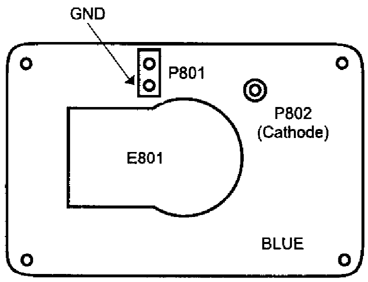

SK01: SERVICE ONLY button
(CONV. ADJ)
385
325
0
325
PSD1
PSD2
PSD3
PSD4
PSD5
D964
A +12V
R603
H. SIZE
R630
V. SIZE
I601
D939
TV 5V
D946
TV 9V
D967
-23V
D966
+27V
Q777
D940
+B 120V
B
T901
D912
PROTECT (RED)
E9A
T702
(FBT)
D947
AUDIO
27V
PDS1
DIGITAL
CONVERGENCE
UNIT
MB
MG
MR
CR
Y2
CG
CB
FT
CONVERGENCE HEAT SINK

☒ SERVICE LED.

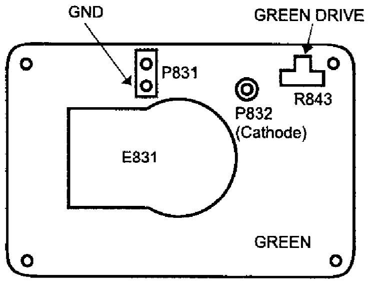
Rear View

3.3 CPT (R) (G) (B), Focus Pack, Control P.W.B.

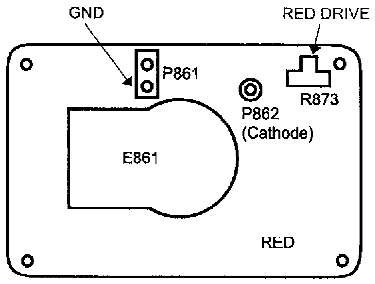
CPT (B)


GND
P801
P802
(Cathode)
E801
BLUE

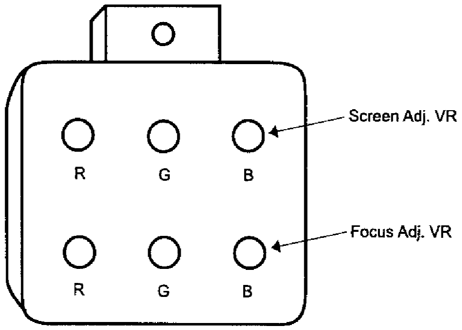
CPT (G)


GND
GREEN DRIVE
P831
R843
P832
(Cathode)
E831
GREEN

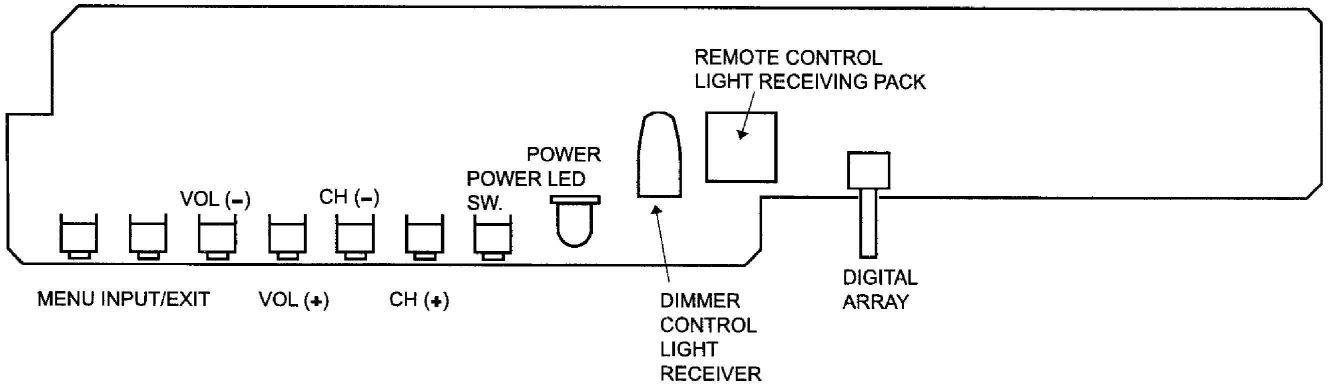
CPT (R)


GND
RED DRIVE
P861
R873
P862
(Cathode)
E861
RED

Focus Pack (UFPK)

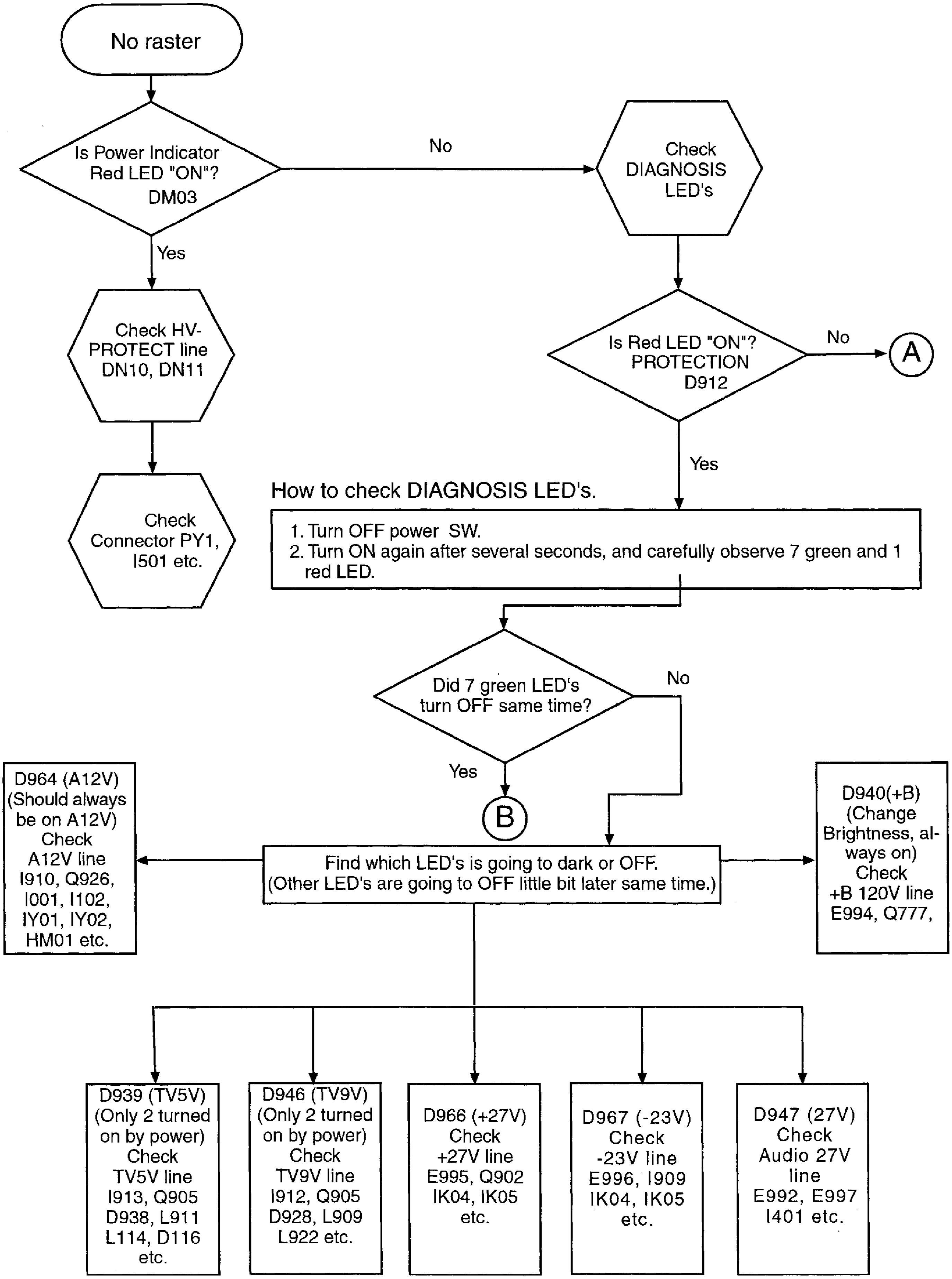

Screen Adj. VR
R
G
B
Focus Adj. VR
R
G
B

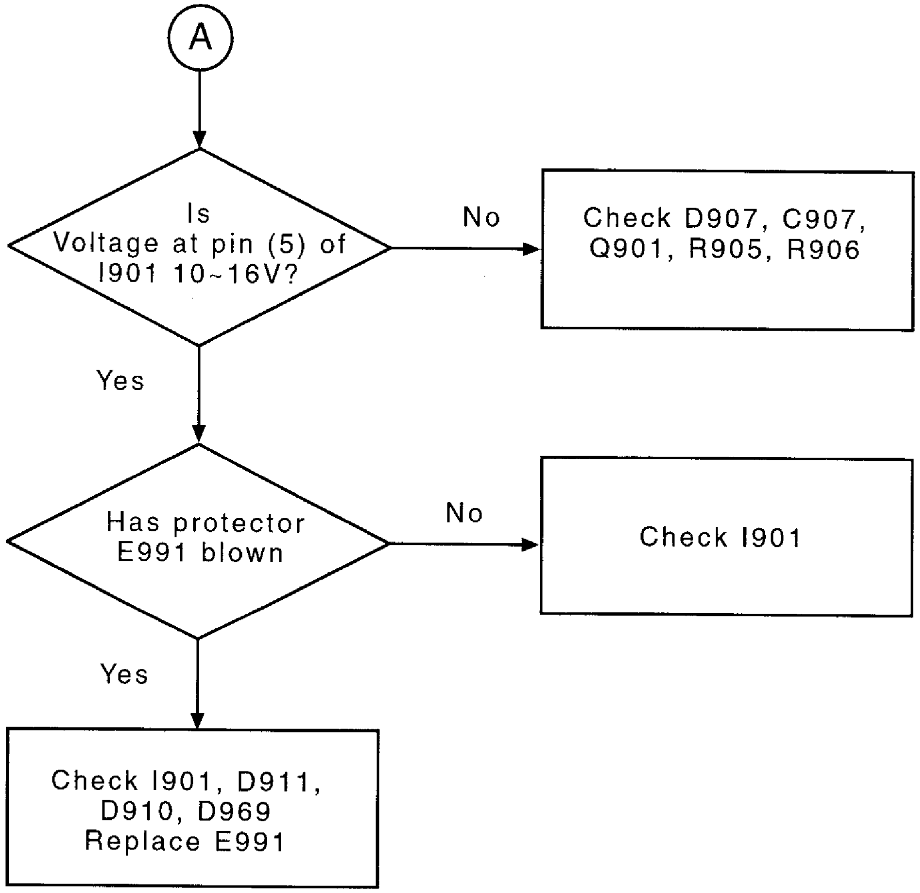
Control P.W.B.

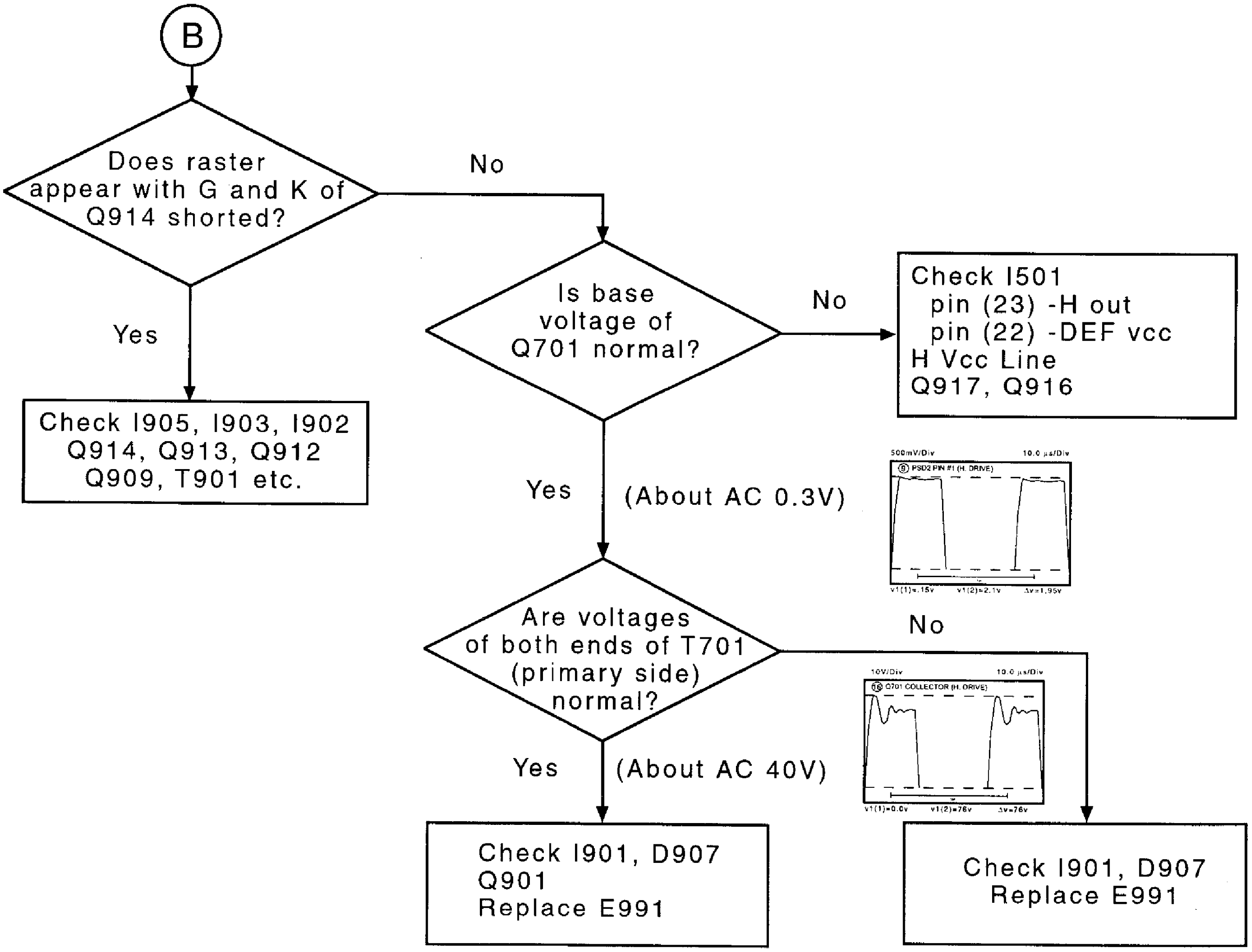

REMOTE CONTROL
LIGHT RECEIVING PACK
POWER
POWER LED
SW.
VOL (-)
CH (-)
MENU
INPUT/EXIT
VOL (+)
CH (+)
DIMMER
CONTROL
LIGHT
RECEIVER
DIGITAL
ARRAY

TROUBLESHOOTING

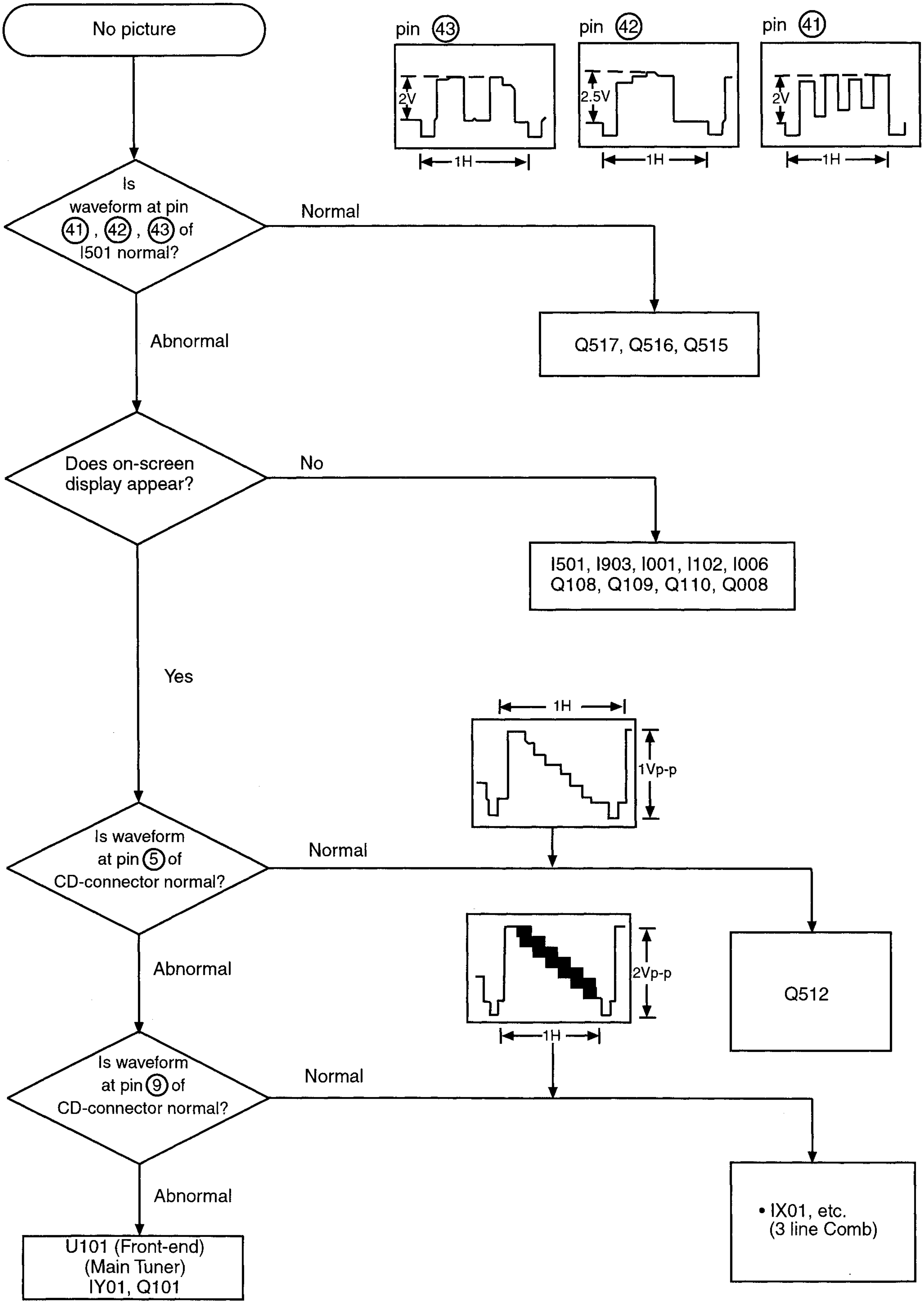
1. No Raster and No Power (REPAIR METHOD)


No raster
Is Power Indicator Red LED "ON"? DM03
No
Yes
Check DIAGNOSIS LED's
Check HV-PROTECT line DN10, DN11
Is Red LED "ON"? PROTECTION D912
No
A
Yes
Check Connector PY1, I501 etc.
How to check DIAGNOSIS LED's.
1. Turn OFF power SW.
2. Turn ON again after several seconds, and carefully observe 7 green and 1 red LED.
Did 7 green LED's turn OFF same time?
No
Yes
B
D964 (A12V) (Should always be on A12V) Check A12V line I910, Q926, I001, I102, IY01, IY02, HM01 etc.
Find which LED's is going to dark or OFF. (Other LED's are going to OFF little bit later same time.)
D940(+B) (Change Brightness, always on) Check +B 120V line E994, Q777,
D939 (TV5V) (Only 2 turned on by power) Check TV5V line I913, Q905 D938, L911 L114, D116 etc.
D946 (TV9V) (Only 2 turned on by power) Check TV9V line I912, Q905 D928, L909 L922 etc.
D966 (+27V) Check +27V line E995, Q902 IK04, IK05 etc.
D967 (-23V) Check -23V line E996, I909 IK04, IK05 etc.
D947 (27V) Check Audio 27V line E992, E997 I401 etc.


A
Is Voltage at pin (5) of I901 10~16V?
No
Check D907, C907, Q901, R905, R906
Yes
Has protector E991 blown
No
Check I901
Yes
Check I901, D911, D910, D969 Replace E991

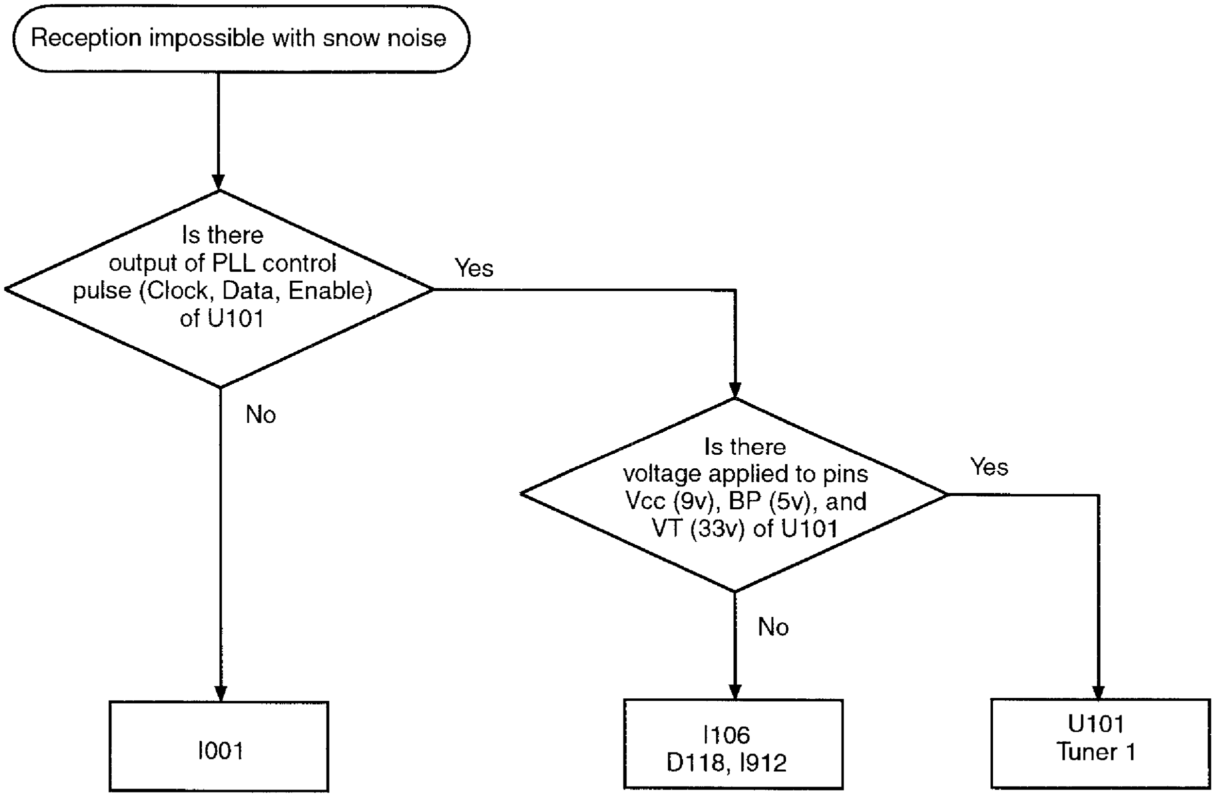

B
Does raster appear with G and K of Q914 shorted?
No
Yes
Check I905, I903, I902 Q914, Q913, Q912 Q909, T901 etc.
Is base voltage of Q701 normal?
No
Check I501
pin (23) -H out
pin (22) -DEF vcc
H Vcc Line
Q917, Q916
Yes
(About AC 0.3V)
500mV/Div
10.0 µs/Div
⑨ PSD2 PIN #1 (H. DRIVE)
v1(1)=.15v
v1(2)=2.1v
Δv=1.95v
Are voltages of both ends of T701 (primary side) normal?
No
10V/Div
10.0 µs/Div
⑯ Q701 COLLECTOR (H. DRIVE)
v1(1)=0.0v
v1(2)=76v
Δv=76v
Yes
(About AC 40V)
Check I901, D907 Q901 Replace E991
Check I901, D907 Replace E991

2. No Picture

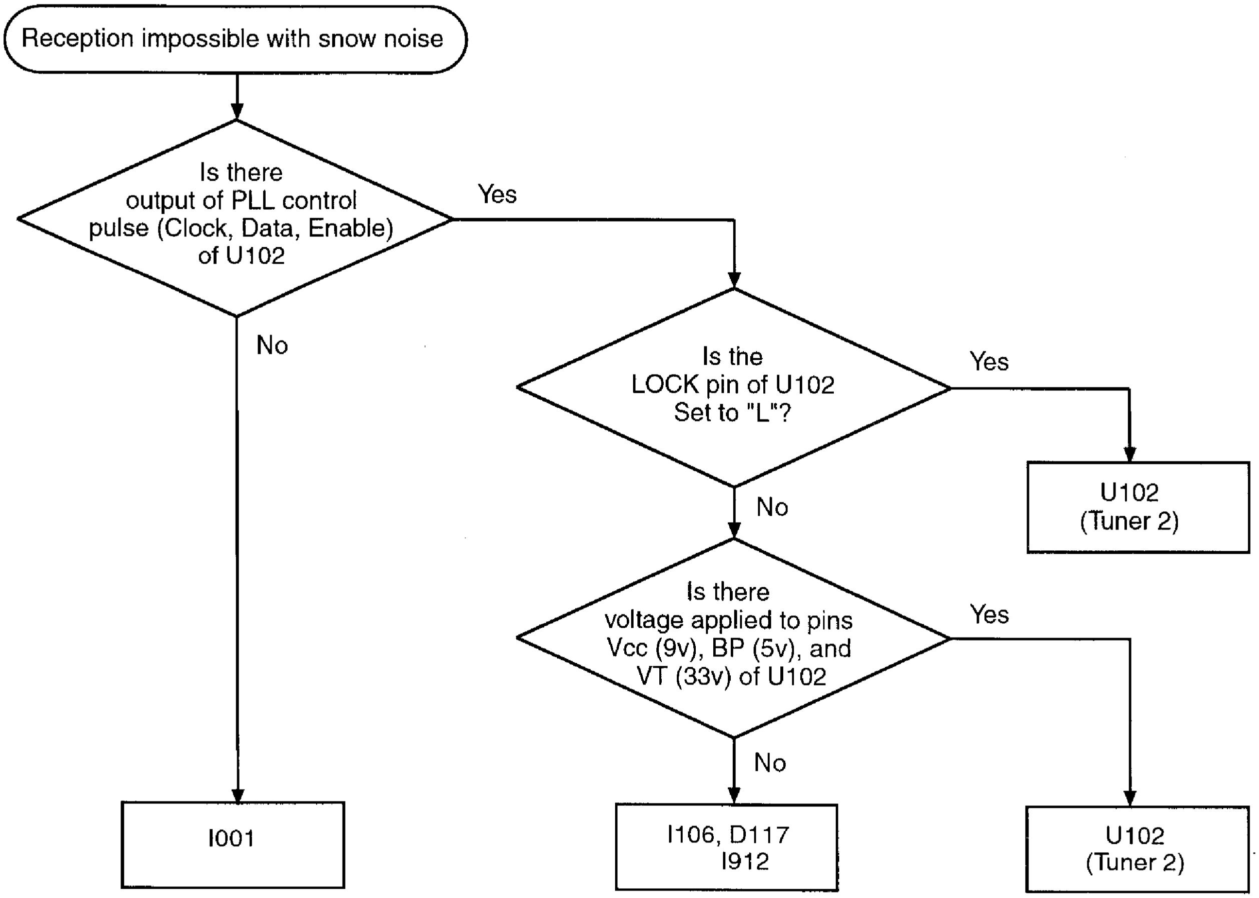

No picture
pin ㊸
2V
1H
pin ㊷
2.5V
1H
pin ㊶
2V
1H
Is waveform at pin ㊶, ㊷, ㊸ of I501 normal?
Normal
Q517, Q516, Q515
Abnormal
Does on-screen display appear?
No
I501, I903, I001, I102, I006
Q108, Q109, Q110, Q008
Yes
1H
1Vp-p
Is waveform at pin ⑤ of CD-connector normal?
Normal
Q512
Abnormal
2Vp-p
1H
Is waveform at pin ⑨ of CD-connector normal?
Normal
• IX01, etc.
(3 line Comb)
Abnormal
U101 (Front-end)
(Main Tuner)
IY01, Q101

3. Reception Impossible with Snow Noise

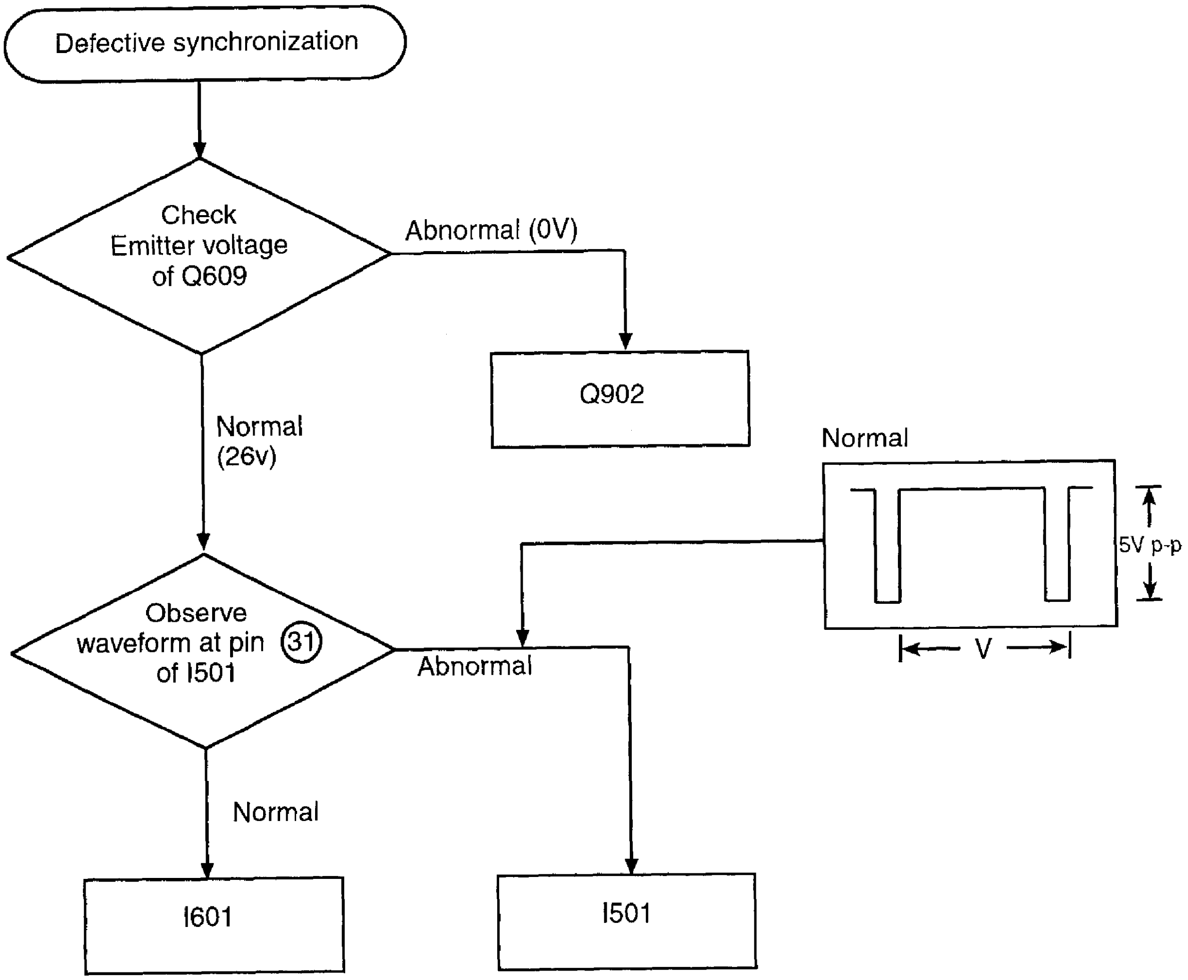
Main Picture


Reception impossible with snow noise
Is there output of PLL control pulse (Clock, Data, Enable) of U101
Yes
No
Is there voltage applied to pins Vcc (9v), BP (5v), and VT (33v) of U101
Yes
No
I001
I106
D118, I912
U101
Tuner 1

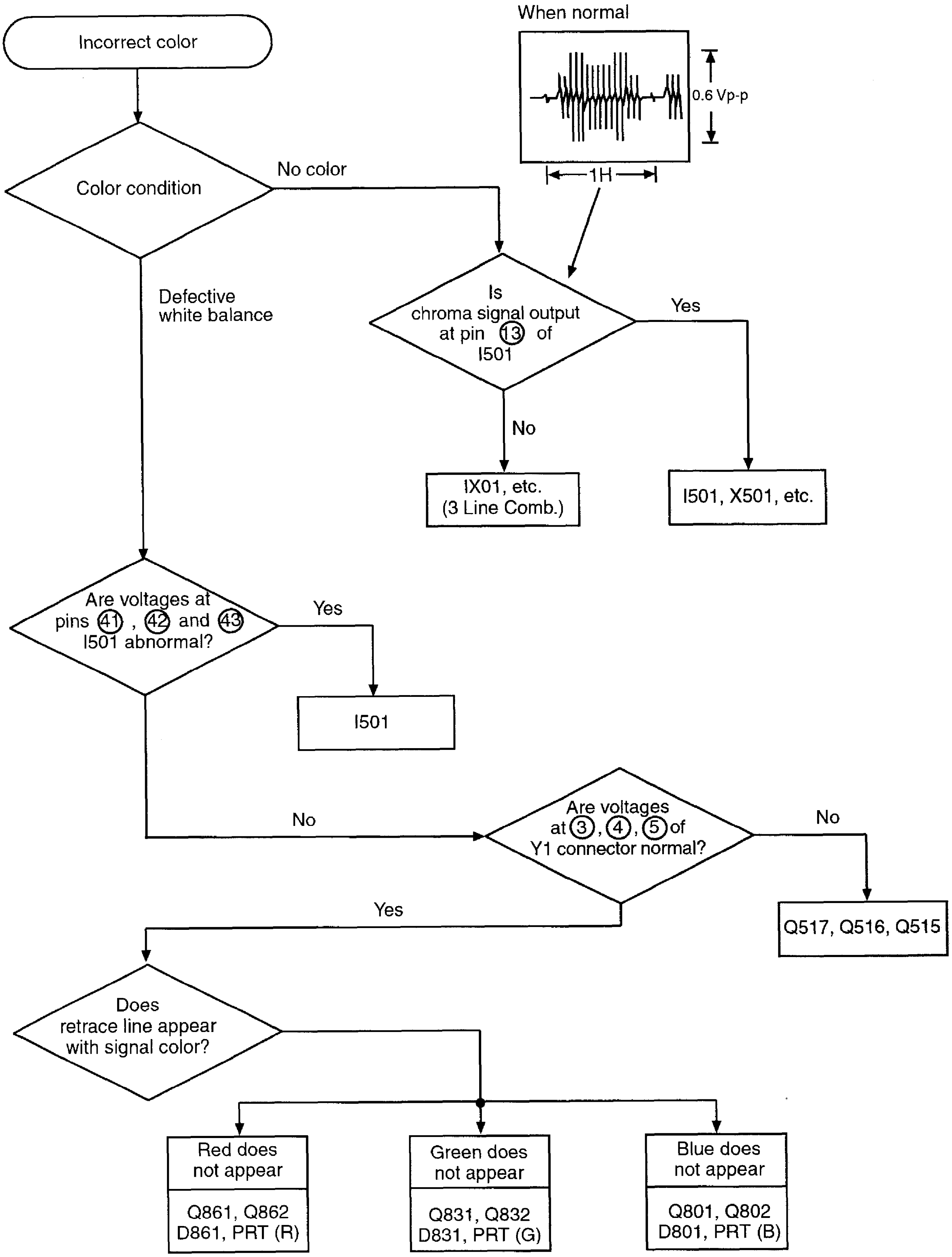
Sub Picture (PIP)


Reception impossible with snow noise
Is there output of PLL control pulse (Clock, Data, Enable) of U102
Yes
No
Is the LOCK pin of U102 Set to "L"?
Yes
No
U102
(Tuner 2)
Is there voltage applied to pins Vcc (9v), BP (5v), and VT (33v) of U102
Yes
No
I001
I106, D117
I912
U102
(Tuner 2)

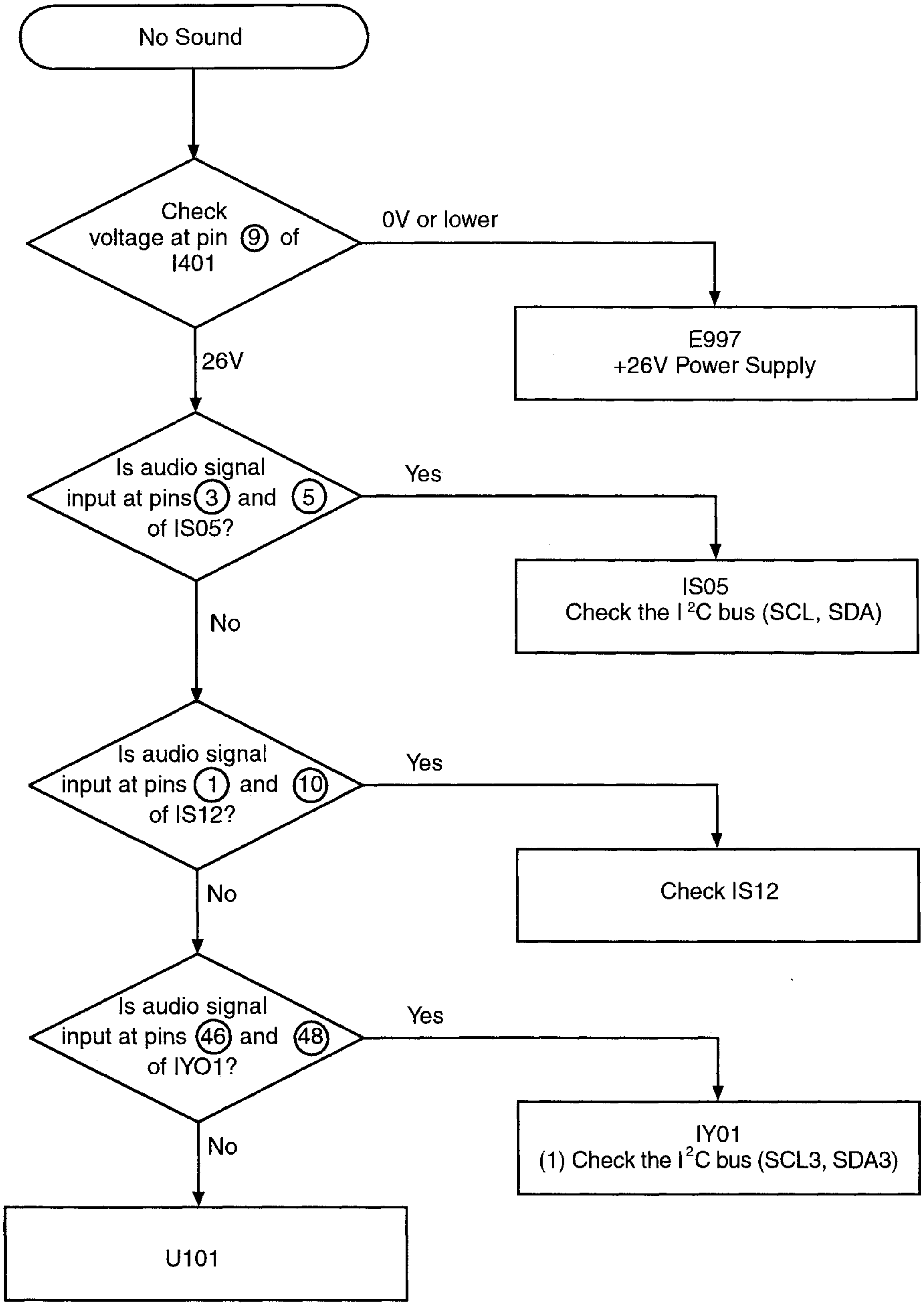
4. Defective Synchronization

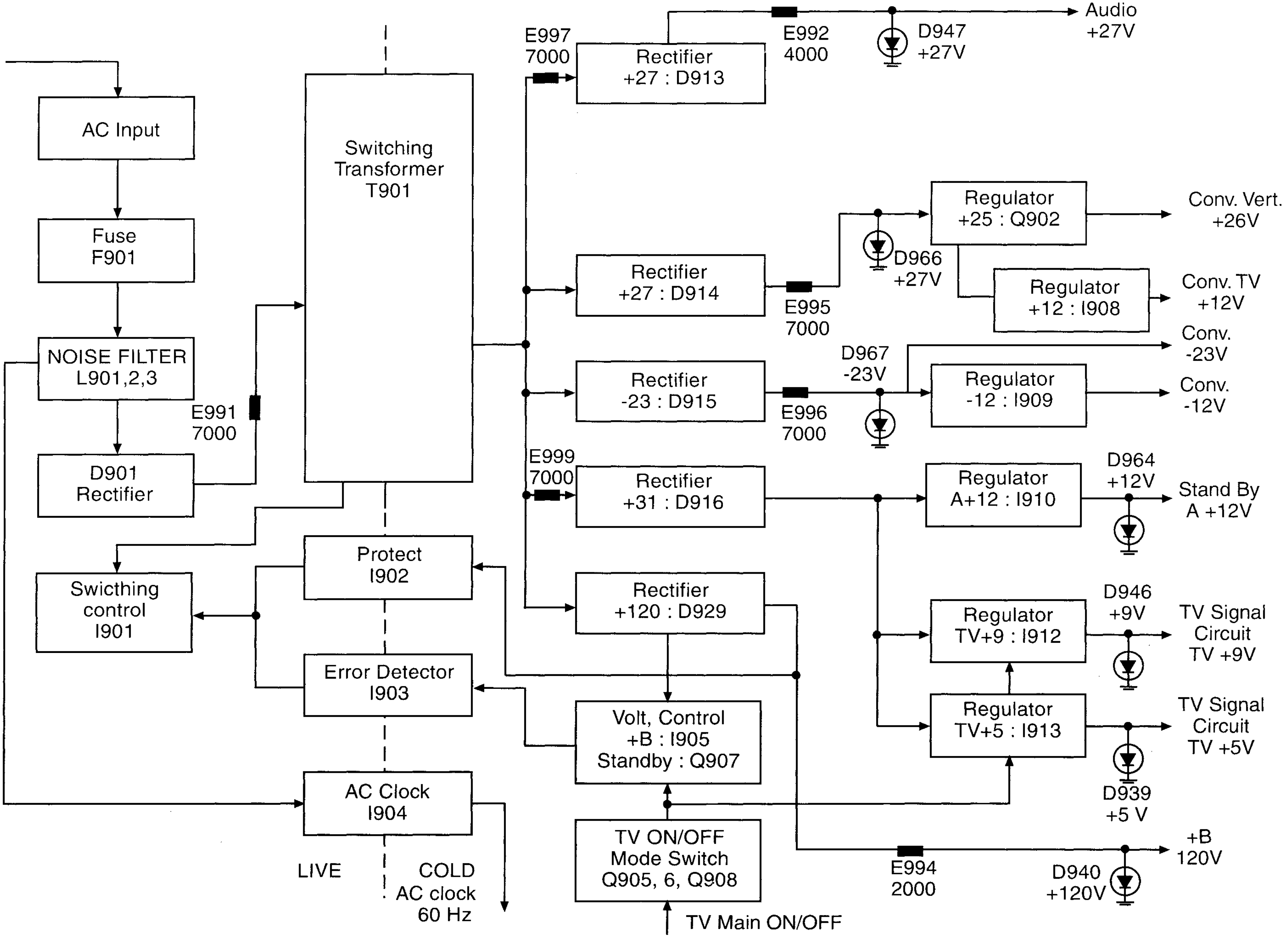

Defective synchronization
Check Emitter voltage of Q609
Abnormal (0V)
Q902
Normal (26v)
Normal
5V p-p
V
Observe waveform at pin ㉛ of I501
Abnormal
Normal
I601
I501

5. Incorrect Color


Incorrect color
Color condition
No color
Defective white balance
When normal
0.6 Vp-p
1H
Is chroma signal output at pin ⑬ of I501
Yes
No
IX01, etc. (3 Line Comb.)
I501, X501, etc.
Are voltages at pins ㊶ , ㊷ and ㊸ I501 abnormal?
Yes
I501
No
Are voltages at ③, ④, ⑤ of Y1 connector normal?
No
Q517, Q516, Q515
Yes
Does retrace line appear with signal color?
Red does not appear
Q861, Q862 D861, PRT (R)
Green does not appear
Q831, Q832 D831, PRT (G)
Blue does not appear
Q801, Q802 D801, PRT (B)

6. No Sound


No Sound
Check voltage at pin ⑨ of I401
0V or lower
E997
+26V Power Supply
26V
Is audio signal input at pins ③ and ⑤ of IS05?
Yes
IS05
Check the I^2C bus (SCL, SDA)
No
Is audio signal input at pins ① and ⑩ of IS12?
Yes
Check IS12
No
Is audio signal input at pins ㊻ and ㊽ of IYO1?
Yes
IY01
(1) Check the I^2C bus (SCL3, SDA3)
No
U101


AC Input
Fuse F901
NOISE FILTER L901,2,3
D901 Rectifier
E991 7000
Switching Transformer T901
Swicthing control I901
Protect I902
Error Detector I903
AC Clock I904
LIVE
COLD
AC clock 60 Hz
E997 7000
Rectifier +27 : D913
E992 4000
D947 +27V
Audio +27V
Rectifier +27 : D914
E995 7000
D966 +27V
Regulator +25 : Q902
Conv. Vert. +26V
Regulator +12 : I908
Conv. TV +12V
Rectifier -23 : D915
E996 7000
D967 -23V
Conv. -23V
Regulator -12 : I909
Conv. -12V
E999 7000
Rectifier +31 : D916
Regulator A+12 : I910
D964 +12V
Stand By A +12V
Rectifier +120 : D929
Regulator TV+9 : I912
D946 +9V
TV Signal Circuit TV +9V
Regulator TV+5 : I913
TV Signal Circuit TV +5V
D939 +5 V
Volt, Control +B : I905 Standby : Q907
TV ON/OFF Mode Switch Q905, 6, Q908
TV Main ON/OFF
E994 2000
D940 +120V
+B 120V

PROTECTION CIRCUIT BLOCK DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

BASIC CIRCUIT DIAGRAM

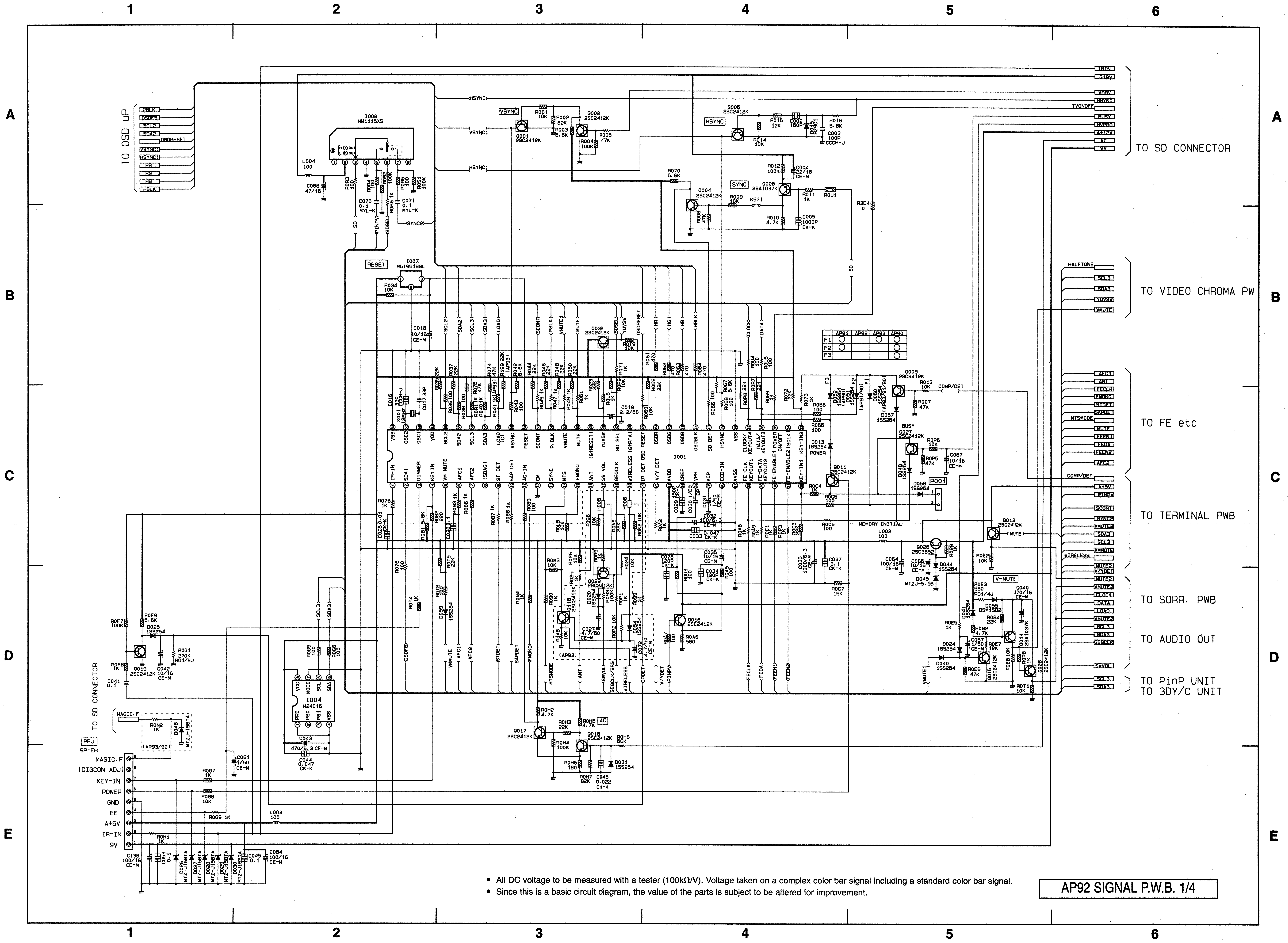
Circuit No.	Pin No.	Voltage DC
I001	1	0
	2	0
	3	3
	4	5.2
	5	0
	6	3.5
	7	1.9
	8	0
	9	0
	10	0
	11	2.4
	12	0
	13	2.4
	14	4.8
	15	4.8
	16	5.2
	17	0
	18	0
	19	0
	20	0
	21	0
	22	5.2
	23	0
	24	2.8
	25	1.2
	26	2.2
	27	0
	28	4.9
	29	4.9
	30	0.2
	31	0
	32	5.2
	33	5.1
	34	0
	35	5.1
	36	5.1

Circuit No.	Pin No.	Voltage DC
I001	37	5.1
	38	0
	39	4.6
	40	4.4
	41	0
	42	0
	43	0
	44	0
	45	0
	46	5.2
	47	3.5
	48	0
	49	0
	50	0
	51	0
	52	0
	53	2.2
	54	2.8
	55	5.0
	56	0
	57	4.9
	58	4.9
	59	5.2
	60	5.2
	61	5.2
	62	2.4
	63	2.3
	64	0
I004	1	0
	2	0
	3	0
	4	0
	5	4.9
	6	4.9
	7	0
	8	5.2

Circuit No.	Pin No.	Voltage DC
I007	1	5.2
	2	0
	3	5.2
I008	1	0
	2	9.3
	3	2.7
	4	0
	5	3.5
	6	2.9
	7	3.4
	8	0

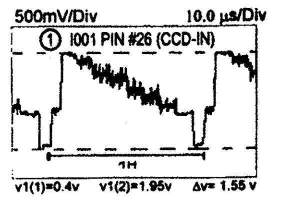
Circuit No.	Pin Name	Voltage DC
Q001	E	0
	B	0
	C	4.9
Q002	E	0.5
	B	0
	C	0.2
Q004	E	0
	B	0.1
	C	4.7
Q005	E	0
	B	0
	C	4.5
Q006	E	2.5
	B	2.6
	C	0.4
Q009	E	0
	B	0
	C	5.3
Q011	E	0
	B	0
	C	5.1

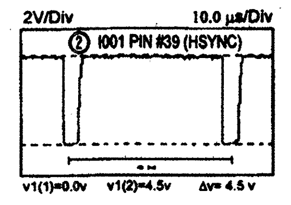
Circuit No.	Pin Name	Voltage DC
Q013	E	0
	B	0
	C	5.2
Q014	E	11.9
	B	11.7
	C	0
Q015	E	0
	B	0
	C	1.6
Q016	E	4.6
	B	5.2
	C	9.3
Q017	E	0.2
	B	0.6
	C	2.4
Q018	E	0.2
	B	0.4
	C	2.6
Q019	E	0
	B	0.7
	C	0
Q026	E	5.2
	B	5.7
	C	11.8
Q027	E	0
	B	0
	C	5.1
Q028	E	0
	B	0
	C	11.7
Q032	E	0
	B	0
	C	5.3

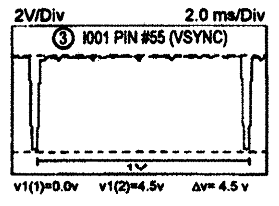

1
2
3
4
5
6
A
B
C
D
E
TO OSD UP
PBLK
OSDFB
SCL2
SDA2
OSDRESET
VSYNC
HSYNC
HR
HG
HB
HBLK
I008 MM1115XS
L004 100
C068 47/16
I007 M51951BSL
RESET
R034 10K
VSYNC
Q001 2SC2412K
Q002 2SC2412K
HSYNC
Q005 2SC2412K
SYNC
Q004 2SC2412K
Q006 2SA1037K
IRIN
R15V
VDRV
HSYNC
TVGNOFF
BUSY
HVPRO
A+12V
AC
9V
TO SD CONNECTOR
HALFTONE
SCL3
SDA3
YUVSW
VMUTE
TO VIDEO CHROMA PW
AFC1
ANT
FECLK
FMONO
STDET
SAPDET
MTSMODE
MUTE
FEEN1
FEDA
FEEN2
AFC2
TO FE etc
COMP/DET
A+5V
PINPV
SCONT
SYNC2
VMUTE2
SDA3
SCL3
VMMUTE
WIRELESS
MUTE2
V/YDET
MUTE2
VMUTE2
CLOCK
DATA
LOAD
VMUTE2
SCL3
SDA3
GEQCLK
TO TERMINAL PWB
TO SORR. PWB
TO AUDIO OUT
SWVOL
SCL3
SDA3
TO PinP UNIT
TO 3DY/C UNIT
I001
X001 12MHz
Q032 2SC2412K
| AP91 | AP92 | AP93 | AP90 |
F1
F2
F3
Q009 2SC2412K
Q027 2SC2412K
Q011 2SC2412K
P001
MEMORY INITIAL
L002 100
Q013 2SC2412K
Q026 2SC3852
V-MUTE
Q014 2SA1037K
Q015 2SC2412K
Q028 2SC2412K
Q016 2SC2412K
Q019 2SC2412K
Q018 2SC2412K
Q017 2SC2412K
Q029 2SC2412K
I004 M24C16
TO SD CONNECTOR
MAGIC.F
PFJ
9P-EH
MAGIC.F
(DIGCON ADJ)
KEY-IN
POWER
GND
EE
A+5V
IR-IN
9V
L003 100
C135 100/16 CE-M
C054 100/16 CE-M
AC
[AP93/92]
[AP93]

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 SIGNAL P.W.B. 1/4

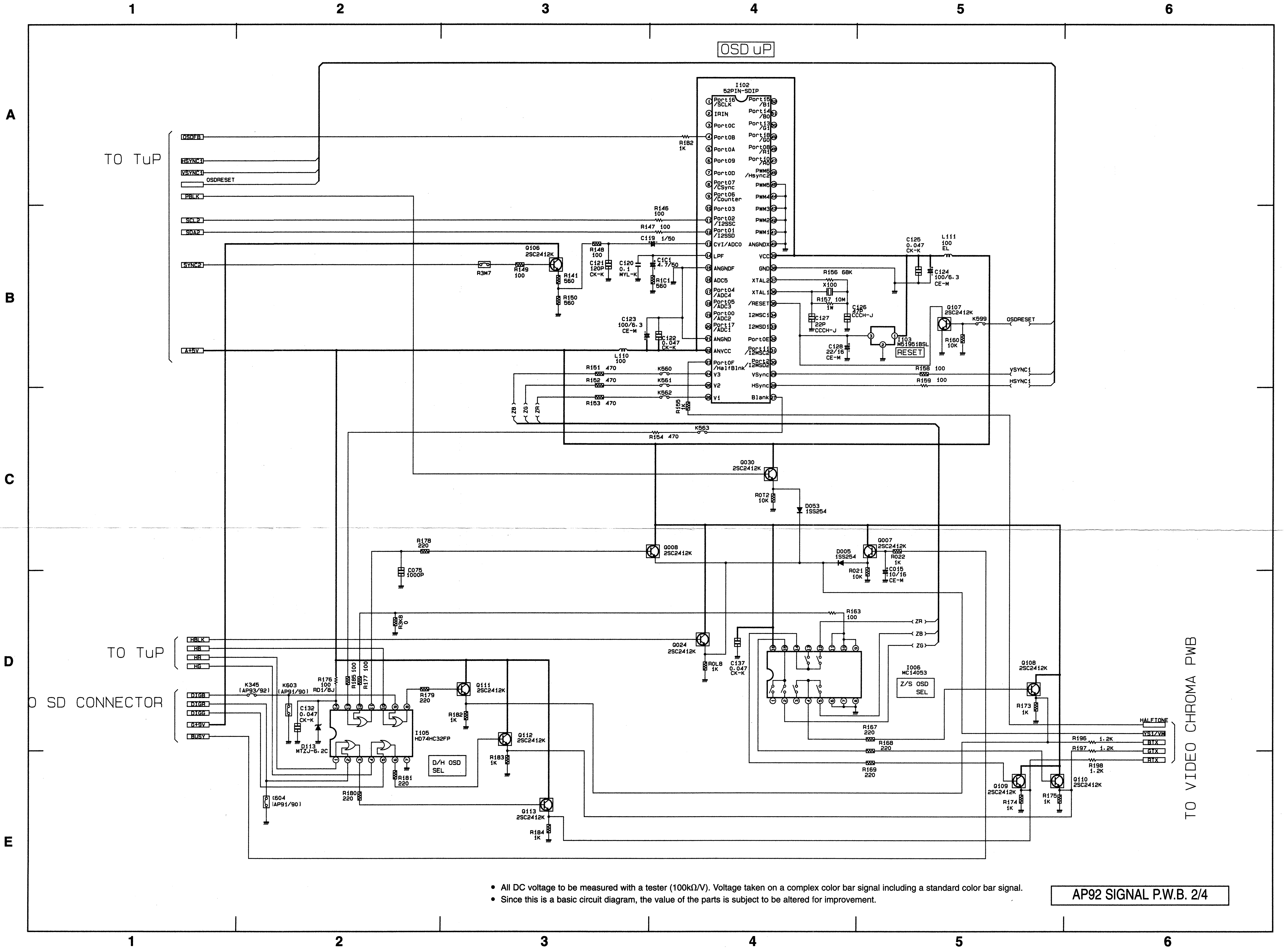






BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
OSD uP
I102
52PIN-SDIP
TO TuP
OSDFB
HSYNC1
VSYNC1
OSDRESET
PBLK
SCL2
SDA2
SYNC2
A+5V
Port16/SCLK
IRIN
Port0C
Port0B
Port0A
Port09
Port0D
Port07/CSync
Port06/Counter
Port03
Port02/I2SSC
Port01/I2SSD
CVI/ADC0
LPF
ANGNDF
ADC5
Port04/ADC4
Port05/ADC3
Port00/ADC2
Port17/ADC1
ANGND
ANVCC
Port0F/HalfBlnk
V3
V2
V1
Port15/B1
Port14/B0
Port13/G1
Port12/G0
Port10/R1
Port11/R0
PWM6/Hsync2
PWM5
PWM4
PWM3
PWM2
PWM1
ANGNDX
VCC
GND
XTAL2
XTAL1
/RESET
I2MSCl
I2MSDl
Port0E
Vsync
Hsync
Blank
R182 1K
R146 100
R147 100
C119 1/50
R148 100
R149 100
R3M7
Q106 2SC2412K
R141 560
R150 560
C121 120P CK-K
C120 0.1 MYL-K
C1C1 4.7/50
R1C1 560
C123 100/6.3 CE-M
C122 0.047 CK-K
L110 100
C125 0.047 CK-K
L111 100 EL
C124 100/6.3 CE-M
R156 68K
X100
R157 10M 1W
C127 22P CCCH-J
C126 27P CCCH-J
C128 22/16 CE-M
I103 M51951BSL
RESET
Q107 2SC2412K
K599
R160 10K
OSDRESET
R158 100
R159 100
VSYNC1
HSYNC1
R151 470
R152 470
R153 470
K560
K561
K562
R155 1K
ZB
ZG
ZR
K563
R154 470
Q030 2SC2412K
R072 10K
D053 1SS254
R178 220
C075 1000P
Q008 2SC2412K
D005 1SS254
Q007 2SC2412K
R022 1K
R021 10K
C015 10/16 CE-M
R163 100
R3K8 0
Q024 2SC2412K
R018 1K
C137 0.047 CK-K
I006 MC14053
Z/S OSD SEL
TO TuP
HBLK
HB
HR
HG
O SD CONNECTOR
DIGB
DIGR
DIGG
G+5V
BUSY
K345 (AP93/92)
K603 (AP91/90)
R176 100
R185 100
R177 100
C132 0.047 CK-K
D113 MTZJ-6.2C
RD1/8J
R179 220
I105 HD74HC32FP
Q111 2SC2412K
R182 1K
Q112 2SC2412K
R183 1K
D/H OSD SEL
R181 220
R180 220
Q113 2SC2412K
R184 1K
K604 (AP91/90)
Q108 2SC2412K
R173 1K
R167 220
R168 220
R169 220
R196 1.2K
R197 1.2K
R198 1.2K
HALFTONE
YS1/VM
BTX
GTX
RTX
Q109 2SC2412K
R174 1K
Q110 2SC2412K
R175 1K
TO VIDEO CHROMA PWB

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 SIGNAL P.W.B. 2/4

Circuit No.	Pin No.	Voltage DC
I006	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0
	15	0
	16	5.2
I102	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	5.2
	12	5.2
	13	2.2
	14	1.2
	15	0
	16	1.8
	17	0
	18	0

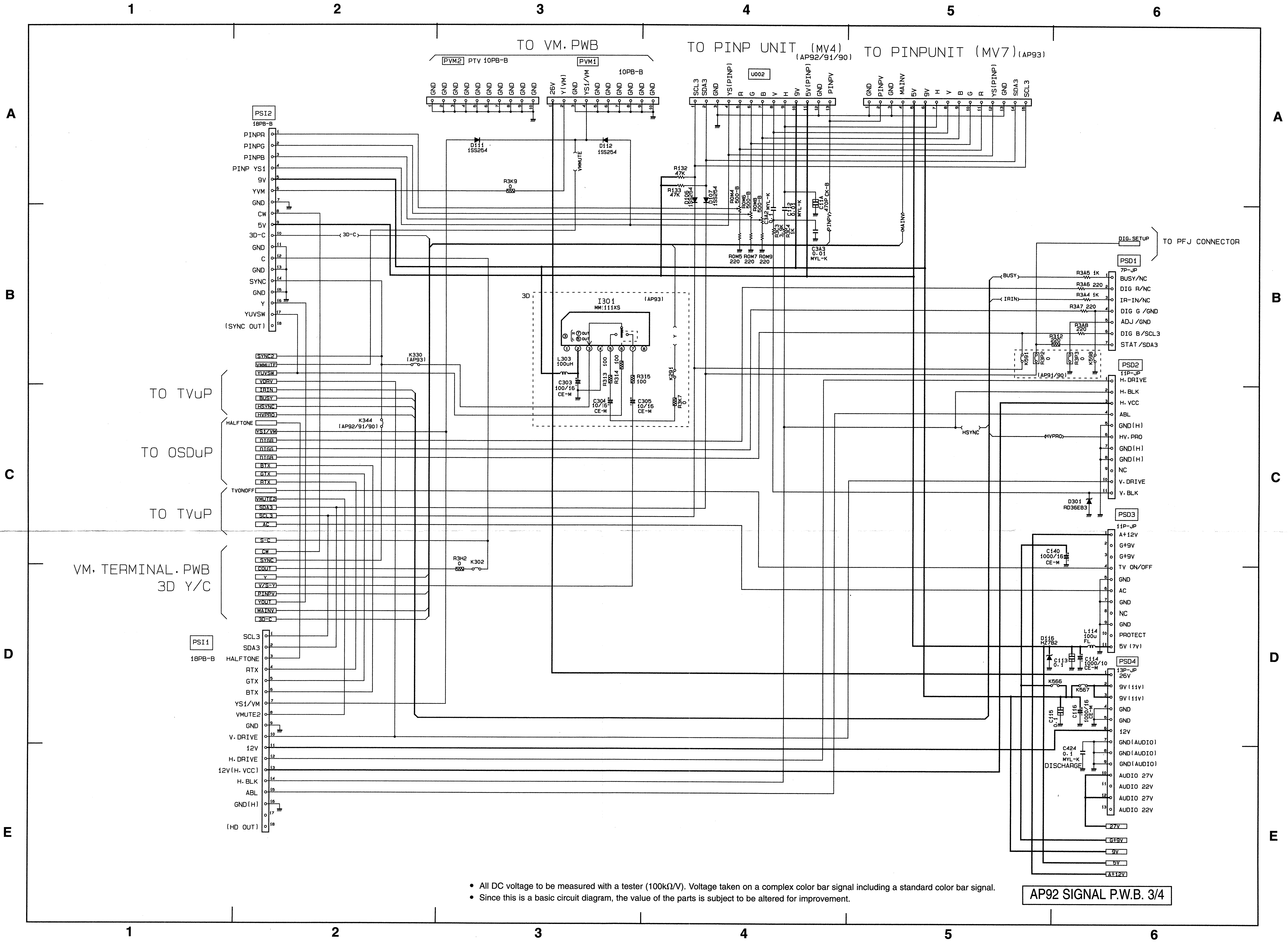
Circuit No.	Pin No.	Voltage DC
I102	19	0
	20	0
	21	0
	22	5.2
	23	0
	24	0
	25	0
	26	0
	27	3.2
	28	4.6
	29	5.1
	30	0
	31	0
	32	0
	33	0
	34	0
	35	5.1
	36	1.6
	37	2.2
	38	0
	39	5.1
	40	0
	41	0
	42	0
	43	0
	44	0
	45	0
	46	0
	47	0
	48	0
	49	0
	50	0
	51	0
	52	0

Circuit No.	Pin No.	Voltage DC
I103	1	5.2
	2	0
	3	5.1
I105	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	5.2

Circuit No.	Pin Name	Voltage DC
Q007	E	0
	B	0
	C	5.2
Q008	E	0
	B	0
	C	5.2
Q024	E	0
	B	0
	C	5.2

Circuit No.	Pin Name	Voltage DC
Q030	E	0
	B	0
	C	5.2
Q106	E	4.6
	B	5.2
	C	9.3
Q107	E	0
	B	0
	C	5.1
Q108	E	0
	B	0
	C	5.2
Q110	E	0
	B	0
	C	5.2
Q111	E	0
	B	0
	C	5.2
Q112	E	0
	B	0
	C	5.2
Q113	E	0
	B	0
	C	5.2

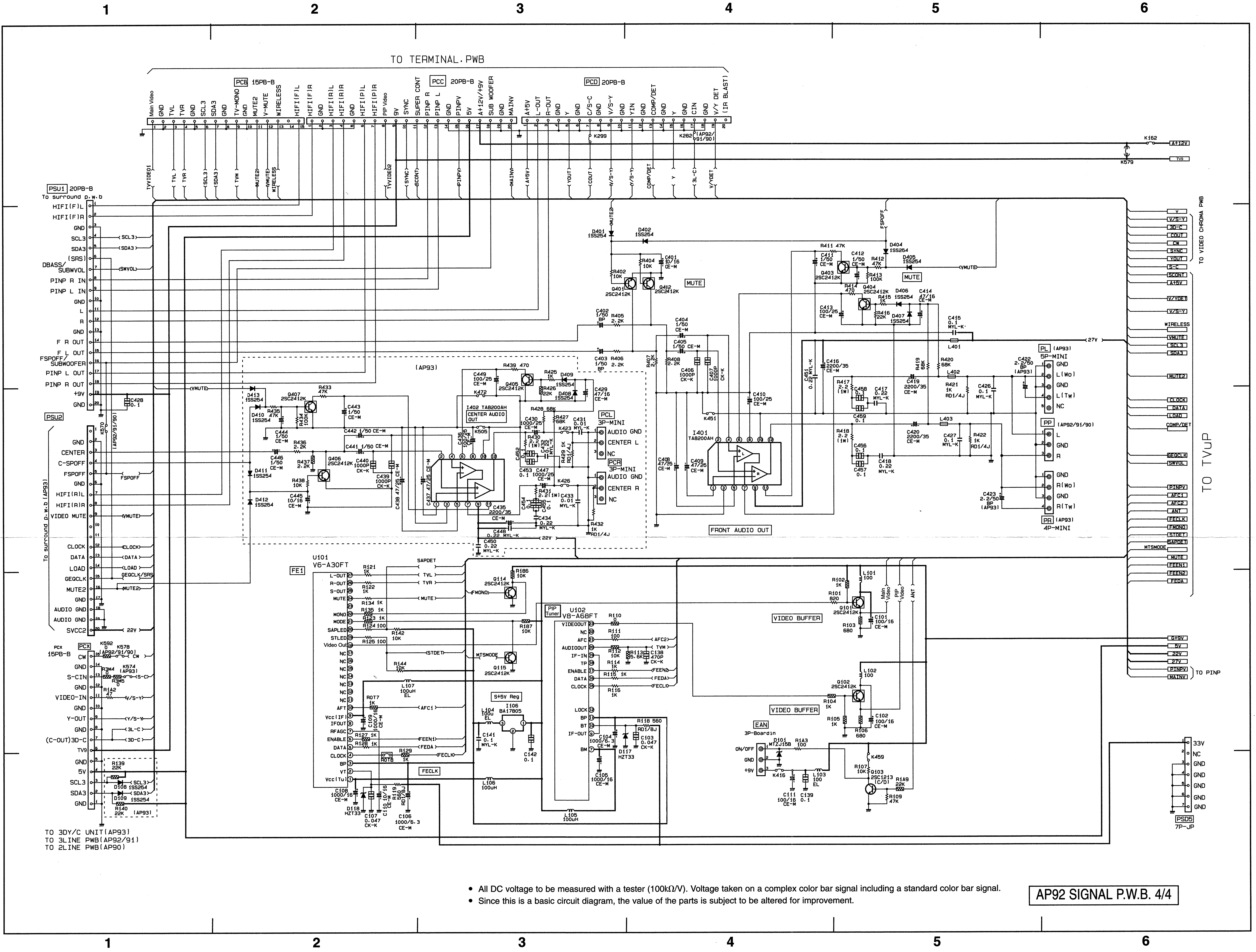
BASIC CIRCUIT DIAGRAM


1
2
3
4
5
6
A
B
C
D
E
TO VM. PWB
PVM2 PTV 10PB-B
PVM1 10PB-B
GND
26V
Y(VM)
YS1/VM
TO PINP UNIT (MV4) (AP92/91/90)
U002
SCL3
SDA3
YS(PINP)
R
G
B
V
H
9V
5V(PINP)
PINPV
TO PINPUNIT (MV7) (AP93)
MAINV
5V
PSI2
18PB-B
PINPR
PINPG
PINPB
PINP YS1
9V
YVM
GND
CW
5V
3D-C
C
SYNC
Y
YUVSW
(SYNC OUT)
D111 1SS254
D112 1SS254
VMMUTE
R3K9 0
R132 47K
R133 47K
D106 1SS254
D107 1SS254
R0M4 500-B
R0M6 500-B
R0M8 500-B
C3A2 MYL-K
R3A3 1K
R3A4 1K
C3A1 0.01 MYL-K
C1A 470P CK-B
R0M5 220
R0M7 220
R0M9 220
C3A3 0.01 MYL-K
3D
I301 MM:111XS
(AP93)
L303 100uH
C303 100/16 CE-M
R313 100
R314 100
R315 100
C304 10/16 CE-M
C305 10/16 CE-M
K291
R3K7 0
TO TVuP
SYNC2
VMMUTE
YUVSW
VDRV
IRIN
BUSY
HSYNC
HVPRO
HALFTONE
K330 (AP93)
K344 (AP92/91/90)
TO OSDuP
YS1/VM
DIGR
DIGG
DIGB
BTX
GTX
RTX
TVONOFF
VMUTE2
SDA3
SCL3
AC
S-C
CW
SYNC
COUT
V/S-Y
PINPV
YOUT
MAINV
3D-C
VM. TERMINAL. PWB
3D Y/C
R3H2 0
K302
PSI1
18PB-B
SCL3
SDA3
HALFTONE
RTX
GTX
BTX
YS1/VM
VMUTE2
GND
V. DRIVE
12V
H. DRIVE
12V(H. VCC)
H. BLK
ABL
GND(H)
(HD OUT)
DIG. SETUP
TO PFJ CONNECTOR
PSD1
7P-JP
BUSY
IRIN
R3A5 1K
R3A6 220
R3A4 1K
R3A7 220
R3A8 220
R312 220
BUSY/NC
DIG R/NC
IR-IN/NC
DIG G /GND
ADJ /GND
DIG B/SCL3
STAT/SDA3
K591
R3P2 0
R3P3 0
K596
(AP91/90)
PSD2
11P-JP
H. DRIVE
H. BLK
H. VCC
ABL
GND(H)
HV. PRO
GND(H)
NC
V. DRIVE
V. BLK
HSYNC
HVPRO
D301 RD36EB3
PSD3
11P-JP
A+12V
G+9V
TV ON/OFF
GND
AC
NC
PROTECT
5V (7V)
C140 1000/16 CE-M
L114 100u FL
D116 HZ7B2
C113 0.1
C114 1000/10 CE-M
PSD4
13P-JP
26V
9V(11V)
12V
GND(AUDIO)
AUDIO 27V
AUDIO 22V
K566
K567
C115 0.1
C116 1000/16 CE-M
C424 0.1 MYL-K
DISCHARGE
27V
G+9V
9V
5V
A+12V
AP92 SIGNAL P.W.B. 3/4

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
TO TERMINAL.PWB
PCB 15PB-B
PCC 20PB-B
PCD 20PB-B
PSU1 20PB-B
To surround p.w.b
PSU2
To surround p.w.b (AP93)
PCX 15PB-B
FE1
U101 V6-A30FT
U102 V6-A68FT
PIP Tuner
S+5V Reg
I106 BA17805
I401 TA8200AH
I402 TA8200AH
CENTER AUDIO OUT
(AP93)
MUTE
PL (AP93) 5P-MINI
PP (AP92/91/90)
PR (AP93) 4P-MINI
PCL 3P-MINI
PCR 3P-MINI
FRONT AUDIO OUT
VIDEO BUFFER
EAN 3P-Boardin
PSD5 7P-JP
TO VIDEO CHROMA PWB
TO TVμP
TO PINP
TO 3DY/C UNIT(AP93)
TO 3LINE PWB(AP92/91)
TO 2LINE PWB(AP90)
AP92 SIGNAL P.W.B. 4/4

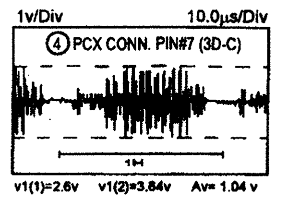
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

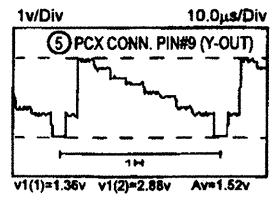
Circuit No.	Pin No.	Voltage DC
I106	1	9.3
	2	0
	3	5.1

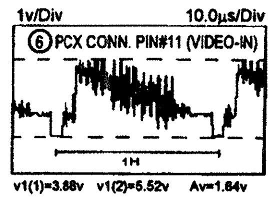
Circuit No.	Pin No.	Voltage DC
I401	1	1.5
	2	0
	3	0
	4	0
	5	1.5
	6	9.3
	7	12.9
	8	5.2
	9	27.5
	10	0
	11	4.4
	12	12.5

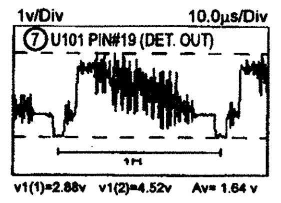
Circuit No.	Pin Name	Voltage DC
Q101	E	6.4
	B	7.1
	C	9.2
Q102	E	1.7
	B	2.3
	C	9.2
Q103	E	0
	B	0.6
	C	0
Q114	E	0
	B	0.7
	C	0
Q115	E	0
	B	0.7
	C	0

Circuit No.	Pin Name	Voltage DC
Q401	E	0
	B	0
	C	0
Q402	E	0
	B	0
	C	0
Q403	E	0
	B	0
	C	4.3









PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

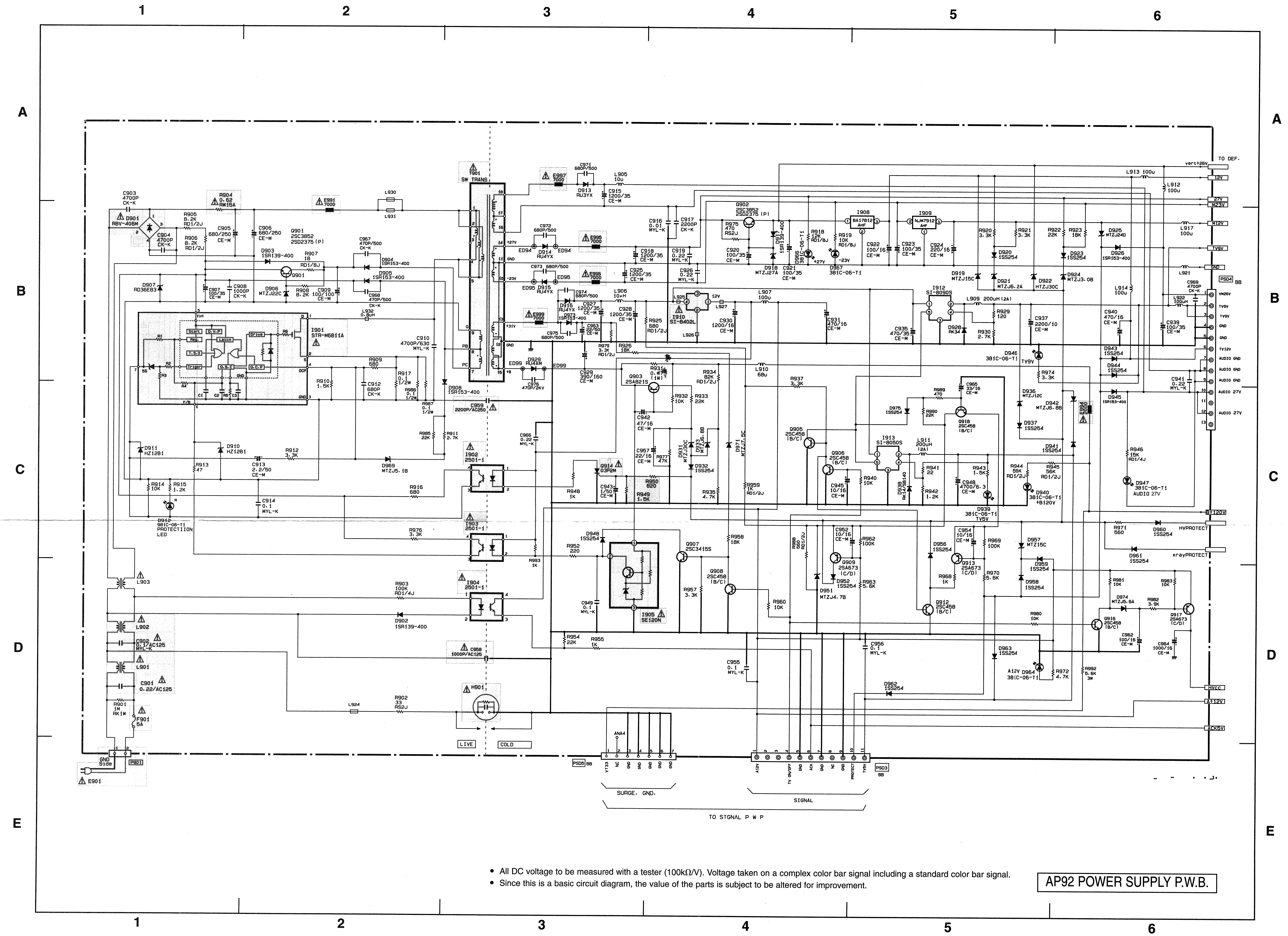
BASIC CIRCUIT DIAGRAM

Circuit No.	Pin No.	Voltage DC
I901	1	155.4
	2	0
	3	0
	4	1.6
	5	24.2
	6	0.2
	7	2.0
I902	1	12.0
	2	11.3
	3	1.9
	4	24.2
I903	1	12.0
	2	11.0
	3	0
	4	23.4
I904	1	8.0
	2	8.4
	3	4.6
	4	11.8
I905	1	119.0
	2	10.9
	3	0

Circuit No.	Pin No.	Voltage DC
I908	1	25.1
	2	0
	3	25.2
I909	1	0
	2	-22.7
	3	-12.2
I910	1	12.0
	2	0
	3	12.2
	4	31.2
I912	1	31.2
	2	9.7
	3	0
	4	9.1
	5	2.5
I913	1	31.2
	2	5.2
	3	0
	4	5.1
	5	2.5

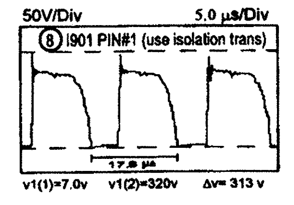
Circuit No.	Pin Name	Voltage DC
Q901	E	24.2
	B	22.0
	C	51.5
Q902	E	25.1
	B	25.7
	C	27.5
Q903	E	119.1
	B	118.5
	C	0.9
Q905	E	0
	B	0
	C	2.5
Q906	E	0
	B	0.7
	C	0
Q907	E	0
	B	0
	C	10.8
Q908	E	0
	B	0.7
	C	0

Circuit No.	Pin Name	Voltage DC
Q909	E	4.6
	B	10.5
	C	0
Q912	E	0
	B	0
	C	0
Q913	E	2.6
	B	2.6
	C	0
Q914	G	0
	A	11.3
	K	0
Q916	E	0
	B	0.7
	C	0
Q917	E	11.9
	B	11.1
	C	11.8
Q918	E	2.6
	B	3.0
	C	4.6


1
2
3
4
5
6
A
B
C
D
E
T901 SW TRANS
I901 STR-M6811A
D901 RBV-406M
C903 4700P CK-K
C904 4700P CK-K
R904 0.62 RW15A
E991 7000
L930
L931
C905 680/250 CE-M
C906 680/250 CE-M
Q901 2SC3852 2SD2375 (P)
D903 1SR139-400
R907 18 RD1/8J
C967 470P/500 CK-K
D904 1SR153-400
D905 1SR153-400
C968 470P/500 CK-K
L932 0.8uH
C910 4700P/630 MYL-K
D907 RD36EB3
C907 100/35 CE-M
C908 1000P CK-K
D906 MTZJ22C
R908 8.2K
C909 100/100 CE-M
R909 680
R910 1.5K
C912 680P CK-K
R917 0.1 1/2W
R986 0.1 1/2W
R987 0.1 1/2W
D908 1SR153-400
C959 2200P/AC250
R985 22K
R911 2.7K
D911 HZ12B1
D910 HZ12B1
R913 47
C913 2.2/50 CE-M
R912 3.3K
D969 MTZJ5.1B
R914 10K
R915 1.2K
C914 0.1 MYL-K
D912 SB1C-06-T1 PROTECTIION LED
R916 680
R976 3.3K
I902 2501-1
I903 2501-1
I904 2501-1
R903 100K RD1/4J
D902 1SR139-400
C958 1000P/AC125
L903
L902
C902 0.47AC125 MYL-K
L901
C901 0.22/AC125
R901 1M RK1W
F901 5A
GND Side
PSD1
E901
L924
R902 33 RS2J
H901
LIVE
COLD
E997 7000
C971 680P/500
D913 RU3YX
L905 10u
C915 1200/35 CE-M
C972 680P/500
D914 RU4YX
E996 7000
C973 680P/500
D915 RU4YX
E995 7000
C974 680P/500
C927 1200/35 CE-M
D973 1SR153-400
E999 7000
C975 680P/500
L906 10uH
C928 1200/35 CE-M
C963 22/50 CE-M
R979 3.3K RD1/2J
R926 18K
D929 RU4AM
C976 470P/2KV
C929 390/160 CE-M
C916 0.01 MYL-K
C917 2200P CK-K
C918 1200/35 CE-M
C925 1200/35 CE-M
C919 0.22 MYL-K
C926 0.22 MYL-K
R925 680 RD1/2J
I910 SI-8402L
L926
L927
C930 1200/16 CE-M
L907 100u
R931 0.47 1W
Q903 2SA821S
R934 82K RD1/2J
R932 10K
R933 22K
C942 47/16 CE-M
C957 22/16 CE-M
R977 47K
D931 MTZJ30C
D933 MTZJ5.6B
D932 1SS254
D971 MTZJ7.5C
Q914 03P2M
C943 1/50 CE-M
R950 820
R949 1.5K
R948 1K
R935 4.7K
R959 1K RD1/2J
D948 1SS254
R952 220
R993 1K
I905 SE120N
C949 0.1 MYL-K
Q907 2SC3415S
R958 18K
Q908 2SC458 (B/C)
R957 3.3K
R960 10K
R954 22K
R955 1K
C955 0.1 MYL-K
Q902 2SC3852 2SD2375 (P)
R975 470 RS2J
D917 1SR153-400
C920 100/35 CE-M
D918 MTZJ27A
C921 100/35 CE-M
D967 SB1C-06-T1
R918 12K RD1/8J
R919 10K RD1/8J
I908 BA17812 AMP
I909 NJM7912 AMP
C922 100/16 CE-M
C923 100/35 CE-M
C924 220/16 CE-M
L910 68u
R937 3.3K
Q905 2SC458 (B/C)
Q906 2SC458 (B/C)
C945 10/16 CE-M
R940 10K
D938 RK34 MTZJ6.2A
C952 10/16 CE-M
R962 100K
R988 560 RD1/2J
Q909 2SA673 (C/D)
D951 MTZJ4.7B
D952 1SS254
R963 5.6K
C956 0.1 MYL-K
D962 1SS254
R920 3.3K
R921 3.3K
D920 1SS254
R922 22K
R923 18K
D923 1SS264
D925 MTZJ24D
D926 1SR153-400
D919 MTZJ15C
D921 MTZJ6.2A
D922 HTZJ30C
D924 MTZJ3.0B
I912 SI-8090S
L909 200uH (2A)
R929 120
D928 RK34
R930 2.7K
C937 2200/10 CE-M
C931 470/16 CE-M
C935 470/35 CE-M
D946 SB1C-06-T1 TV9V
R974 3.3K
C940 470/16 CE-M
L914 100u
D943 1SS254
D944 1SS254
D945 1SR153-400
D975 1SS254
R989 470
C965 33/16 CE-M
R990 22K
Q918 2SC458 (B/C)
D936 MTZJ12C
D942 MTZJ6.8B
D937 1SS254
I913 SI-8050S
L911 200uH (2A)
D941 1SS254
R941 22
R942 1.2K
R943 1.5K
C948 4700/6.3 CE-M
R944 56K RD1/2J
R945 56K RD1/2J
D940 SB1C-06-T1 +B120V
D939 SB1C-06-T1 TV5V
R946 15K RD1/4J
D947 SB1C-06-T1 AUDIO 27V
C954 10/16 CE-M
R969 100K
D956 1SS254
Q913 2SA673 (C/D)
R970 5.6K
R968 1K
Q912 2SC458 (B/C)
D957 MTZ15C
D959 1SS254
D958 1SS254
R971 560
D960 1SS254
D961 1SS254
R981 10K
R983 10K
D974 MTZJ5.6A
R982 3.9K
Q917 2SA673 (C/D)
Q916 2SC458 (B/C)
C962 100/16 CE-M
C964 1000/16 CE-M
R980 10K
D963 1SS254
A12V D964 SB1C-06-T1
R972 4.7K
R992 5.6K 3W
L913 100u
L912 100u
L917 100u
L921
L922 100uH
C969 4700P CK-K
C939 100/35 CE-M
C941 0.22 MYL-K
TO DEF.
vert+26V
12V
27V
H23V
M12V
TV9V
GND
PSD4 BB
VM26V
TV9V
TV9V
GND
GND
TV12V
AUDIO GND
AUDIO GND
AUDIO GND
AUDIO 27V
AUDIO 27V
B120V
HVPROTECT
xrayPROTECT
HVCC
A12V
ACK5V
ANA4
PSD5 BB
V133
NC
GND
GND
GND
GND
GND
SURGE. GND.
A12V
TV ON/OFF
GND
ACK
GND
NC
GND
PROTECT
TV9V
PSD3 BB
SIGNAL
TO SIGNAL P W P

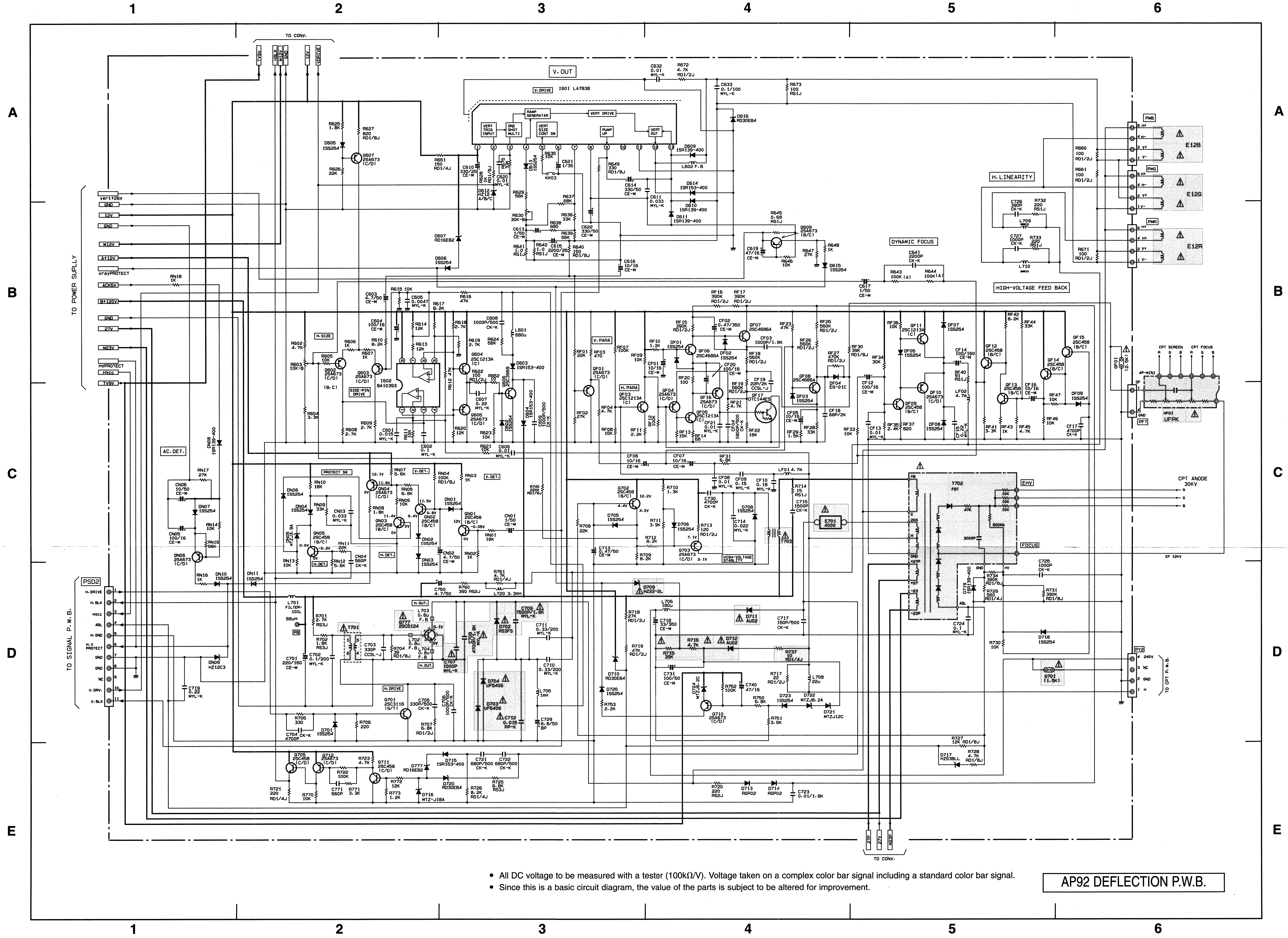
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 POWER SUPPLY P.W.B.



BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
TO CONV.
V.OUT
V.DRIVE
I601 LA7838
RAMP GENERATOR
VERT DRIVE
VERT TRIG INPUT
ONE SHOT MULTI
VERT SIZE CONT SW
PUMP UP
VERT OUT
TO POWER SUPPLY
AC.DET.
PROTECT SW
H.SIZE
SIDE-PIN DRIVE
I602 BA10393
V.PARA
H.PARA
H.LINEARITY
DYNAMIC FOCUS
HIGH-VOLTAGE FEED BACK
PMB
PMG
PMR
E12B
E12G
E12R
CPT SCREEN
CPT FOCUS
UFPK
PF1
CPT ANODE 30KV
EHV
T702 FBT
FOCUS
HIGH-VOLTAGE STABILITY
PSD2
TO SIGNAL P.W.B.
H.DRIVE
H.BLK
HVCC
ABL
H.GND
H.V PROTECT
GND
NC
V.DRV.
V.BLK
H.DET.
V.DET.
H.OUT
PY2
TO CPT P.W.B.
TO CONV.

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 DEFLECTION P.W.B.

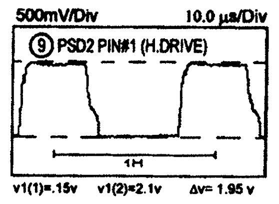
Circuit No.	Pin No.	Voltage DC
I601	1	11.3
	2	4.8
	3	5.4
	4	5.6
	5	0
	6	5.1
	7	5.5
	8	25.0
	9	1.6
	10	1.3
	11	0
	12	12.8
	13	24.7
I602	1	4.8
	2	2.1
	3	2.2
	4	0
	5	2.9
	6	4.8
	7	2.4
	8	11.7

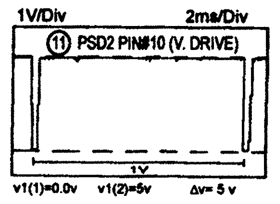
Circuit No.	Pin Name	Voltage DC
Q602	E	5.4
	B	4.8
	C	2.1
Q603	E	5.9
	B	5.3
	C	0.5

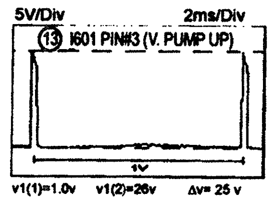
Circuit No.	Pin Name	Voltage DC
Q604	E	4.6
	B	4.8
	C	11.7
Q605	E	4.6
	B	4.8
	C	0
Q606	E	0
	B	0
	C	48.7
Q607	E	11.2
	B	10.3
	C	6.1
Q609	E	25.1
	B	24.8
	C	0
Q701	E	0
	B	0.4
	C	27.8
Q702	E	3.4
	B	3.1
	C	11.7
Q703	E	9.2
	B	8.6
	C	1.7
Q705	E	1.8
	B	2.0
	C	12.0
Q710	E	4.7
	B	5.0
	C	0
Q711	E	0
	B	0.0
	C	10.0

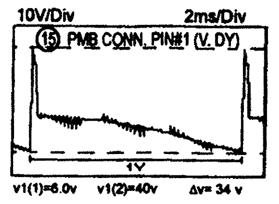
Circuit No.	Pin Name	Voltage DC
Q712	E	12.0
	B	17.0
	C	2.0
Q777	E	0
	B	0
	C	119.0
QF01	E	8.1
	B	7.5
	C	0
QF03	E	0.9
	B	1.5
	C	6.9
QF04	E	7.3
	B	6.9
	C	0.7
QF05	E	0.1
	B	0.7
	C	11.4
QF06	E	11.1
	B	12.1
	C	432.1
QF07	E	552.2
	B	448.5
	C	1096
QF08	E	11.1
	B	11.4
	C	638.5
QF09	E	0.2
	B	0.9
	C	7.9
QF10	E	8.2
	B	7.9
	C	0
QF11	E	8.2
	B	8.4
	C	11.7

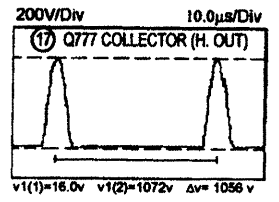
Circuit No.	Pin Name	Voltage DC
QF12	E	4.2
	B	4.8
	C	11.7
QF13	E	0.8
	B	1.4
	C	4.8
QF14	E	8.8
	B	9.4
	C	11.7
QF15	E	9.4
	B	9.7
	C	11.7
QF16	E	11.6
	B	11.4
	C	0
QF17	E	0
	B	0
	C	6.9
QN01	E	0
	B	0
	C	11.8
QN02	E	0.5
	B	0.9
	C	11.8
QN03	E	0
	B	0.4
	C	11.8
QN04	E	11.8
	B	11.8
	C	0
QN05	E	0
	B	0
	C	0.6
QN06	E	9.1
	B	9.1
	C	0

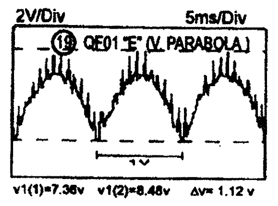

⑨ PSD2 PIN#1 (H.DRIVE)

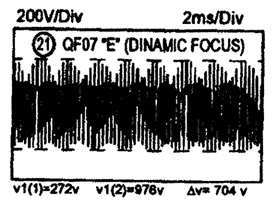

⑪ PSD2 PIN#10 (V. DRIVE)

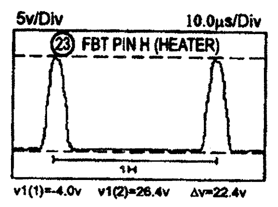

⑬ I601 PIN#3 (V. PUMP UP)

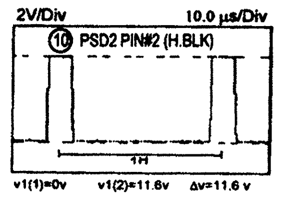

⑮ PMB CONN. PIN#1 (V. DY)

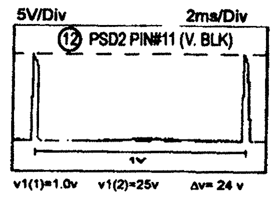

⑰ Q777 COLLECTOR (H. OUT)

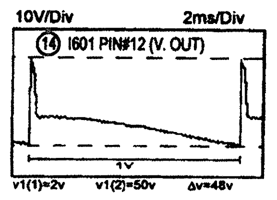

⑲ QE01 "E" (V. PARABOLA)

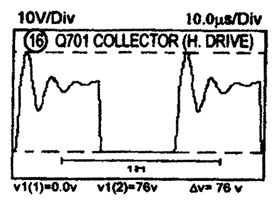

㉑ QF07 "E" (DINAMIC FOCUS)

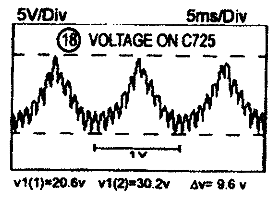

㉓ FBT PIN H (HEATER)

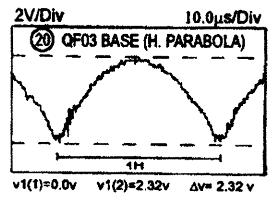

⑩ PSD2 PIN#2 (H.BLK)

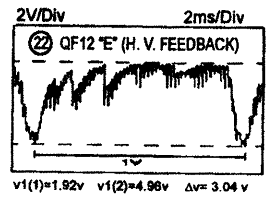

⑫ PSD2 PIN#11 (V. BLK)


⑭ I601 PIN#12 (V. OUT)


⑯ Q701 COLLECTOR (H. DRIVE)


⑱ VOLTAGE ON C725


⑳ QF03 BASE (H. PARABOLA)


㉒ QF12 "E" (H. V. FEEDBACK)

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

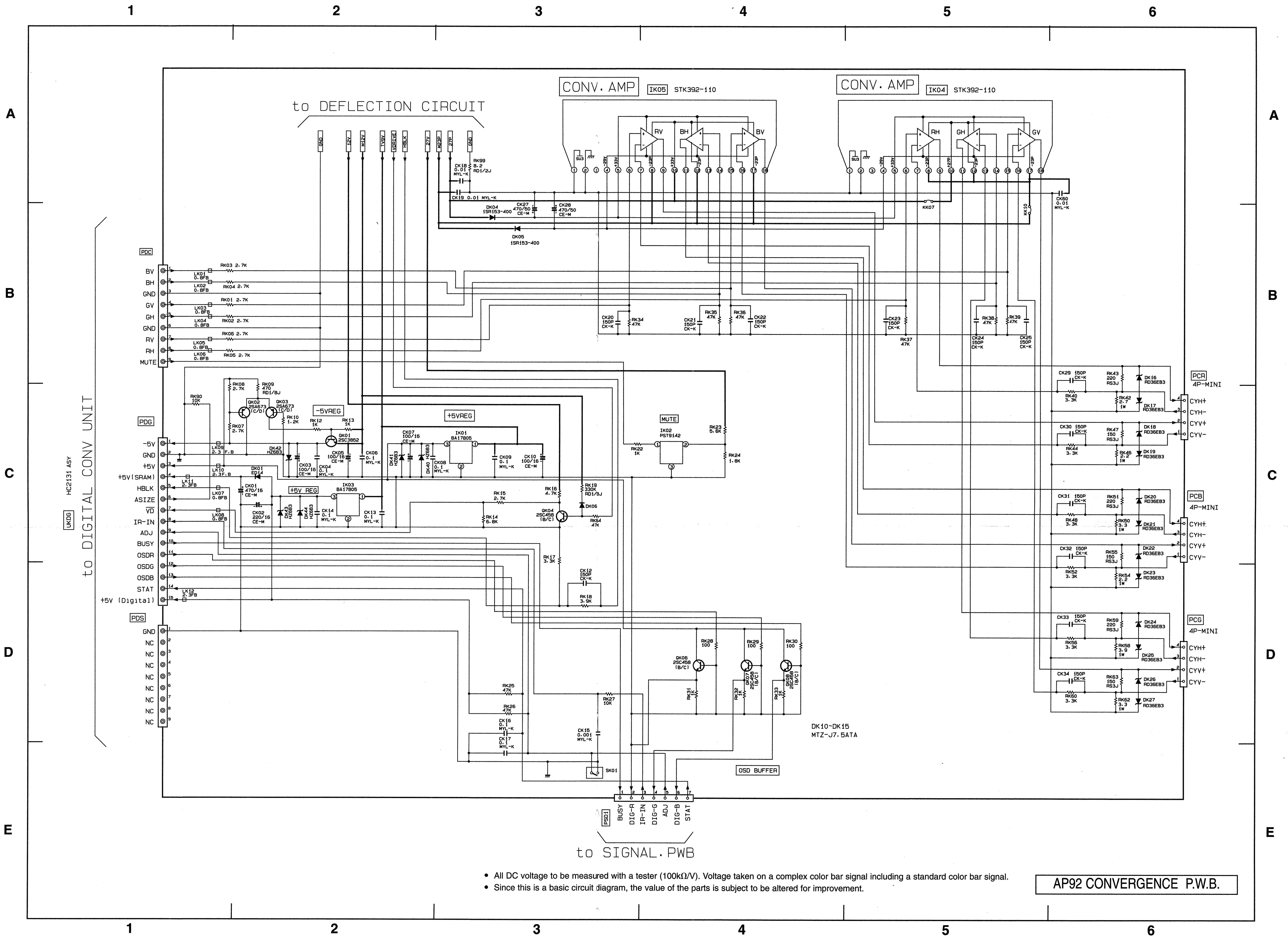
BASIC CIRCUIT DIAGRAM

Circuit No.	Pin No.	Voltage DC
IK01	1	9.5
	2	0
	3	5.0
IK02	1	4.6
	2	6.8
	3	0
IK03	1	9.5
	2	0
	3	5.0

Circuit No.	Pin No.	Voltage DC
IK04	1	0
	2	0
	3	-29.5
	4	-30.6
	5	35.2
	6	0
	7	0
	8	-22.4
	9	0
	10	27.4
	11	0
	12	-22.9
	13	0
	14	0
	15	0
	16	0
	17	-22.5
	18	0

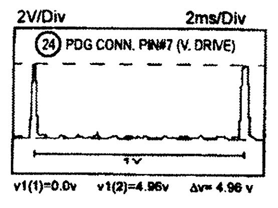
Circuit No.	Pin No.	Voltage DC
IK05	1	0
	2	0
	3	-29.5
	4	-30.7
	5	35.2
	6	0
	7	-0.8
	8	-22.47
	9	-0.5
	10	27.4
	11	-0.6
	12	-22.5
	13	-0.5
	14	-0.5
	15	-0.3
	16	-0.3
	17	-22.5
	18	-0.2

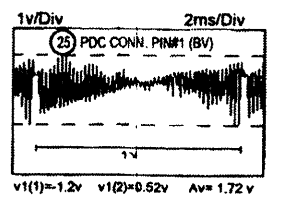
Circuit No.	Pin Name	Voltage DC
QK01	E	-12.1
	B	-11.6
	C	-5.3
QK02	E	0.6
	B	-0.1
	C	0
QK03	E	0.6
	B	0
	C	-10.9
QK04	E	0
	B	0.6
	C	0.3
QK06	E	0
	B	0
	C	5.0
QK07	E	0
	B	0
	C	5.0
QK08	E	0
	B	0
	C	5.0

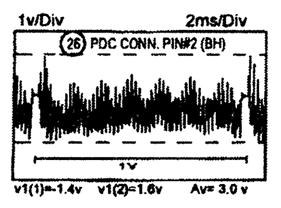

1
2
3
4
5
6
A
B
C
D
E
CONV. AMP
IK05 STK392-110
CONV. AMP
IK04 STK392-110
RV
BH
BV
RH
GH
GV
to DEFLECTION CIRCUIT
to DIGITAL CONV UNIT
HC2131 ASY
UKDG
PDC
BV
BH
GND
GV
GH
GND
RV
RH
MUTE
PDG
-5V
GND
+5V
+5V(SRAM)
HBLK
ASIZE
VD
IR-IN
ADJ
BUSY
OSDR
OSDG
OSDB
STAT
+5V (Digital)
PDS
GND
NC
-5VREG
+5VREG
+5V REG
MUTE
IK02 PST9142
IK01 BA17805
IK03 BA17805
QK01 2SC3852
QK02 2SA673
QK03 2SA673
QK04 2SC458
QK06 2SC458
PCR 4P-MINI
PCB 4P-MINI
PCG 4P-MINI
CYH+
CYH-
CYV+
CYV-
DK10-DK15
MTZ-J7.5ATA
SK01
OSD BUFFER
PSD1
BUSY
DIG-R
IR-IN
DIG-G
ADJ
DIG-B
STAT
to SIGNAL.PWB

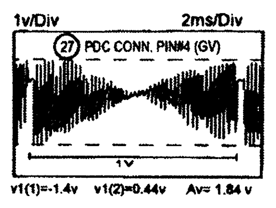
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

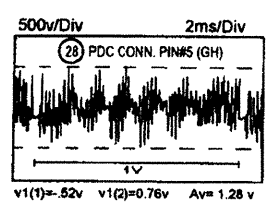
AP92 CONVERGENCE P.W.B.

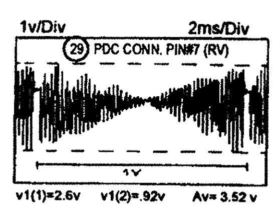


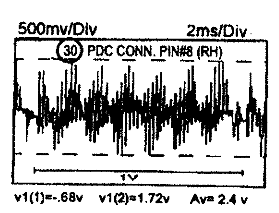






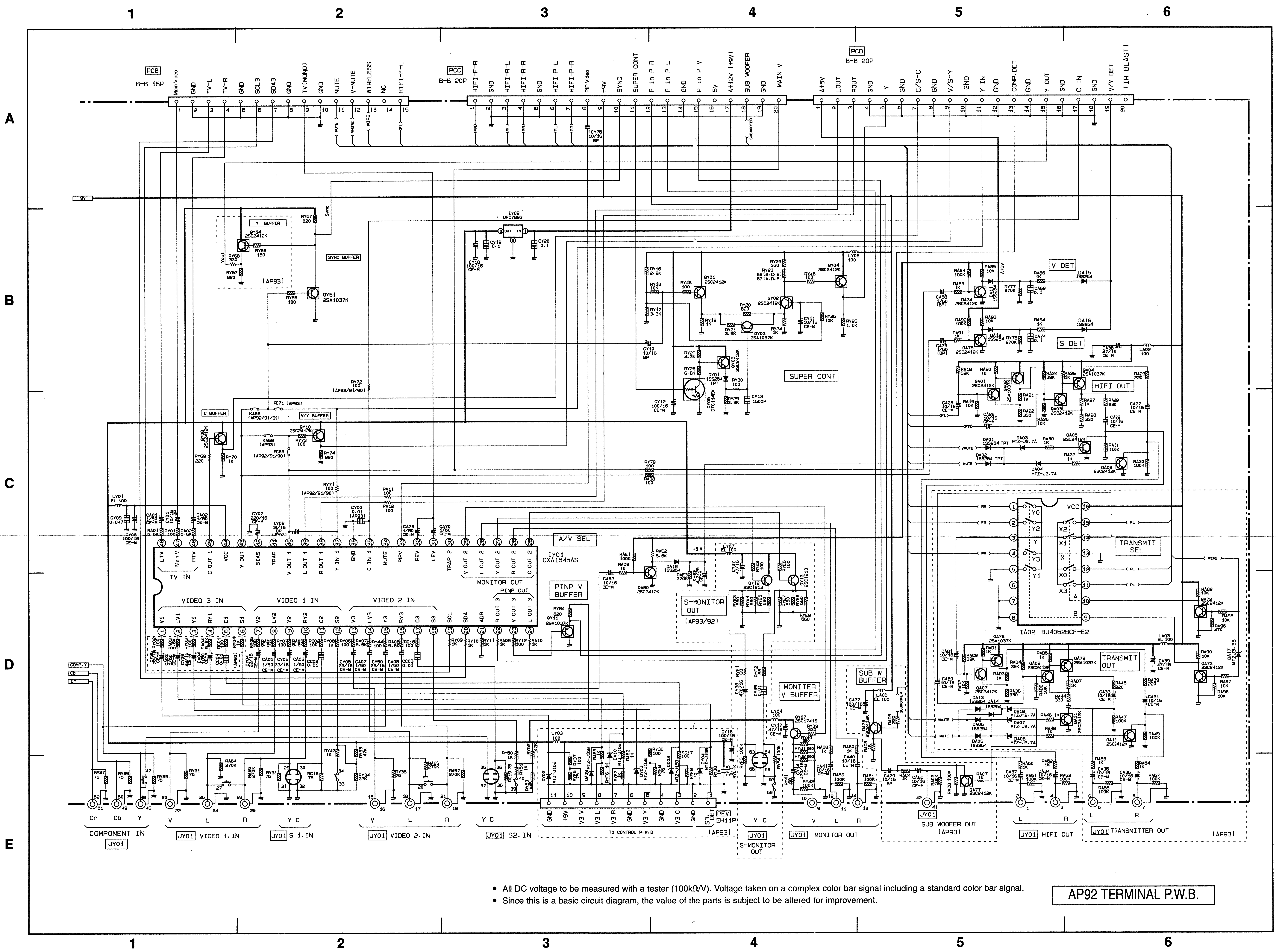






BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
PCB
B-B 15P
PCC
B-B 20P
PCD
B-B 20P
Main Video
GND
TV-L
TV-R
SCL3
SDA3
TV(MONO)
MUTE
V-MUTE
WIRELESS
NC
HIFI-F-L
HIFI-F-R
HIFI-R-L
HIFI-R-R
HIFI-P-L
HIFI-P-R
PIP Video
+9V
SYNC
SUPER CONT
P in P R
P in P L
P in P V
5V
A+12V (+9V)
SUB WOOFER
MAIN V
A+5V
LOUT
ROUT
Y
C/S-C
V/S-Y
Y IN
COMP. DET
Y OUT
C IN
V/Y DET
(IR BLAST)
9V
Y BUFFER
SYNC BUFFER
IY02
UPC7893
SUPER CONT
V DET
S DET
HIFI OUT
C BUFFER
Y/Y BUFFER
A/V SEL
IY01
CXA1545AS
TV IN
VIDEO 3 IN
VIDEO 1 IN
VIDEO 2 IN
MONITOR OUT
PINP OUT
PINP V BUFFER
S-MONITOR OUT
(AP93/92)
MONITER V BUFFER
SUB W BUFFER
TRANSMIT SEL
IA02 BU4052BCF-E2
TRANSMIT OUT
COMP.Y
Cb
Cr
PFV
EH11P
TO CONTROL P.W.B
(AP93)
Cr
Cb
Y
COMPONENT IN
JY01
V
L
R
JY01 VIDEO 1 IN
Y C
JY01 S 1 IN
V
L
R
JY01 VIDEO 2 IN
Y C
JY01 S2. IN
Y C
JY01
S-MONITOR OUT
V
L
R
JY01 MONITOR OUT
JY01
SUB WOOFER OUT
(AP93)
L
R
JY01 HIFI OUT
L
R
JY01 TRANSMITTER OUT
(AP93)

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 TERMINAL P.W.B.

Circuit No.	Pin No.	Voltage DC
IY01	1	4.7
	2	4.7
	3	4.7
	4	4.7
	5	4.7
	6	0.5
	7	4.7
	8	4.7
	9	4.7
	10	4.7
	11	4.7
	12	2.3
	13	4.7
	14	4.7
	15	4.7
	16	4.7
	17	4.7
	18	2.3
	19	4.9
	20	4.9
	21	4.7
	22	4.7

Circuit No.	Pin No.	Voltage DC
IY01	23	4.6
	24	4.7
	25	4.7
	26	4.7
	27	4.7
	28	4.7
	29	4.7
	30	4.7
	31	4.7
	32	4.7
	33	4.7
	34	0
	35	4.7
	36	0
	37	4.7
	38	4.7
	39	4.7
	40	4.7
	41	4.7
	42	4.7
	43	4.6
	44	9.1
	45	4.6
	46	4.7
	47	4.7
	48	4.7

Circuit No.	Pin Name	Voltage DC
QM01	E	0
	B	0.7
	C	0.1
QM02	E	1.4
	B	-
	C	9.3

Circuit No.	Pin Name	Voltage DC
QA01	E	1.2
	B	1.8
	C	8.6
QA02	E	9.3
	B	8.6
	C	4.3
QA03	E	1.2
	B	1.8
	C	0
QA04	E	9.3
	B	8.6
	C	4.2
QA05	E	0
	B	0
	C	0
QA06	E	0
	B	0
	C	0
QA74	E	0
	B	0
	C	3.3
QA75	E	0
	B	0.6
	C	0

Circuit No.	Pin Name	Voltage DC
QA80	E	0
	B	0.5
	C	0
QY01	E	4.5
	B	5.1
	C	9.2
QY02	E	4.5
	B	5.1
	C	7.5
QY03	E	4.5
	B	4.5
	C	4.5
QY04	E	6.8
	B	7.5
	C	9.3
QY05	E	0
	B	2.1
	C	0
QY06	E	5.1
	B	5.7
	C	9.3
QY07	E	3.9
	B	4.6
	C	9.1
QY08	E	3.9
	B	4.6
	C	9.2
QY10	E	3.9
	B	4.6
	C	9.2
QY11	E	5.3
	B	4.7
	C	0
QY51	E	3.2
	B	2.6
	C	0

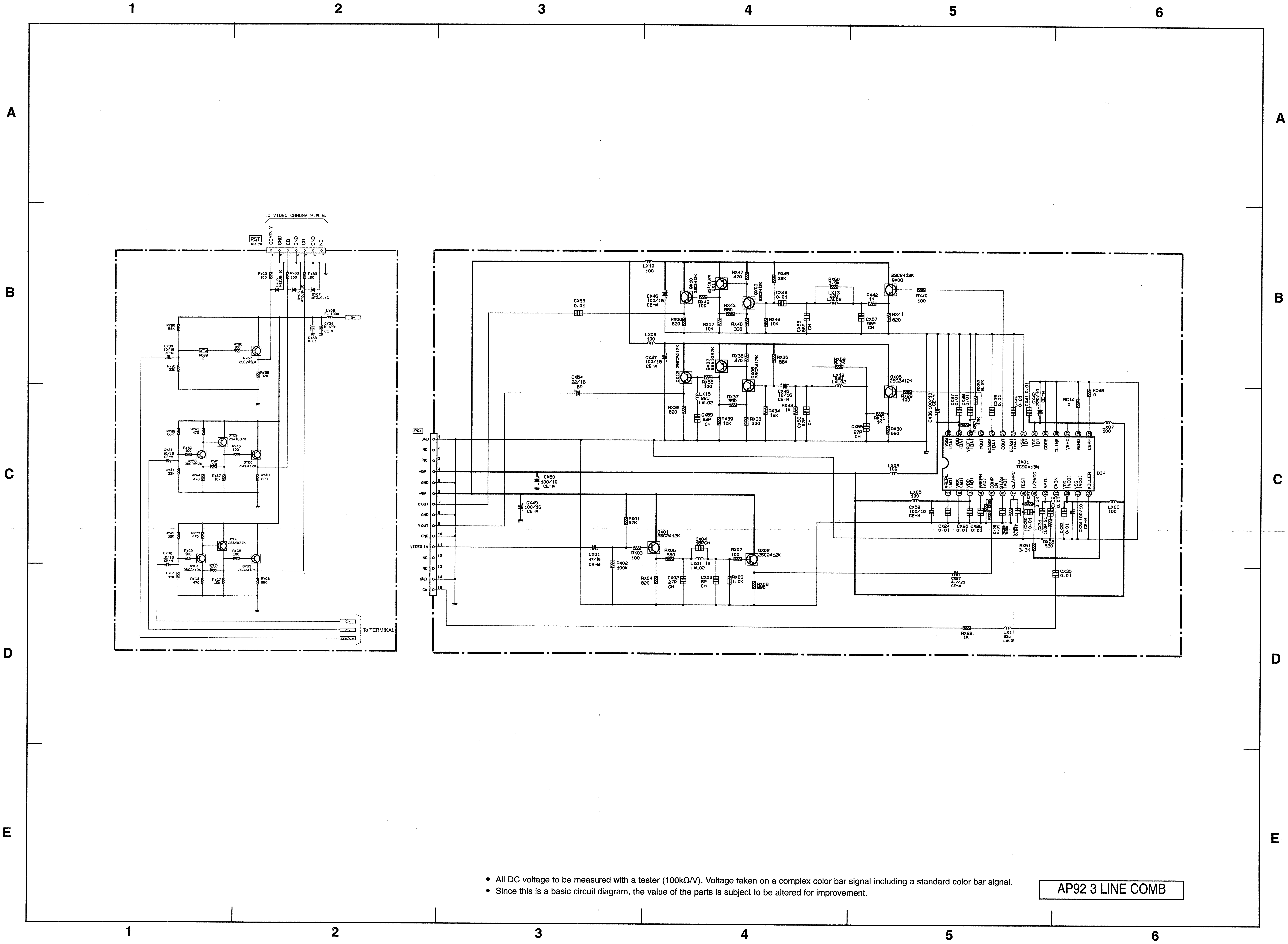
Circuit No.	Pin Name	Voltage DC
QY57	E	2.5
	B	3.1
	C	9.4
QY58	E	2.8
	B	3.4
	C	8.7
QY59	E	9.4
	B	8.7
	C	3.4
QY60	E	[illegible]
	B	3.4
	C	9.4
QY61	E	2.8
	B	3.4
	C	8.7
QY62	E	9.4
	B	8.7
	C	3.9
QY63	E	[illegible]
	B	[illegible]
	C	9.

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

BASIC CIRCUIT DIAGRAM

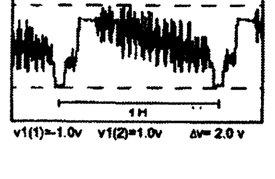
Circuit No.	Pin Name	Voltage DC
QX01	E	5.5
	B	6.2
	C	9.4
QX02	E	3.3
	B	4.1
	C	9.4
QX05	E	3.7
	B	4.4
	C	9.3
QX06	E	1.5
	B	2.2
	C	8.6
QX07	E	9.3
	B	8.6
	C	5.9
QX08	E	3.6
	B	4.3
	C	9.3
QX09	E	1.2
	B	1.8
	C	8.7
QX10	E	4.8
	B	5.5
	C	9.3
QX11	E	9.3
	B	8.7
	C	5.5
QX12	E	5.2
	B	5.9
	C	9.3

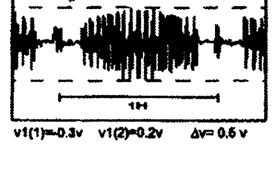
Circuit No.	Pin No.	Voltage DC
IX01	21	0
	22	3.5
	23	4.3
	24	0
	25	4.4
	26	3.6
	27	4.9
	28	0
IX01	1	1.5
	2	0
	3	4.9
	4	3.4
	5	2.6
	6	1.3
	7	3.3
	8	0
	9	2.5
	10	0
	11	0
	12	5.1
	13	0
	14	0
	15	0
	16	0
	17	4.9
	18	0
	19	0
	20	4.9

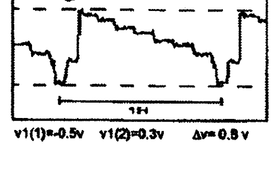

1
2
3
4
5
6
A
B
C
D
E
TO VIDEO CHROMA P.W.B.
PST
COMP. Y
GND
CB
GND
CR
GND
NC
To TERMINAL
PCX
GND
NC
NC
+5V
GND
+9V
C OUT
GND
Y OUT
GND
VIDEO IN
NC
NC
GND
CH
IX01
TC90A13N
DIP
2SC2412K
2SA1037K
LX10 100
LX09 100
LX07 100
LX06 100
LX05 100
LX08 100
CX53 0.01
CX54 22/16 BP
CX50 100/10 CE-M
CX49 100/16 CE-M
CX01 47/16 CE-M
RX22 1K
LX11 33u LAL02
CX35 0.01
CX27 4.7/25 CE-M

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 3 LINE COMB

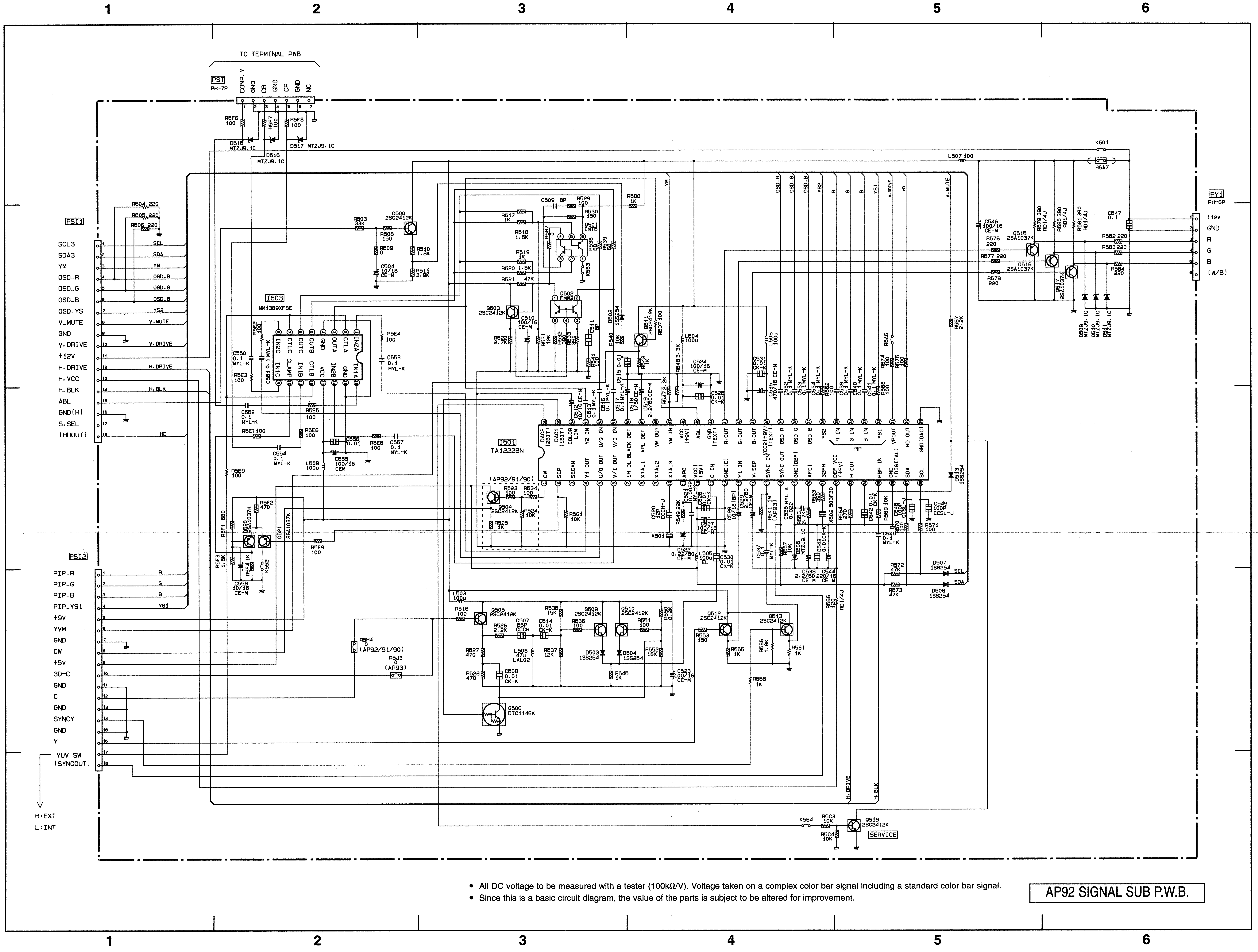






BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
TO TERMINAL PWB
PST
PH-7P
COMP. Y
GND
CB
GND
CR
GND
NC
PS1
SCL3
SDA3
YM
OSD_R
OSD_G
OSD_B
OSD_YS
V_MUTE
GND
V. DRIVE
+12V
H. DRIVE
H. VCC
H. BLK
ABL
GND(H)
S. SEL
(HDOUT)
PS2
PIP_R
PIP_G
PIP_B
PIP_YS1
+9V
YVM
GND
CW
+5V
3D-C
GND
C
GND
SYNCY
GND
Y
YUV SW
(SYNCOUT)
H:EXT
L:INT
I503
MM1389XFBE
I501
TA1222BN
(AP92/91/90)
(AP93)
PY1
PH-6P
+12V
GND
R
G
B
(W/B)
Q500 2SC2412K
Q501 IMT6
Q502 FMW2
Q503 2SC2412K
Q504 2SC2412K
Q505 2SC2412K
Q506 DTC114EK
Q509 2SC2412K
Q510 2SC2412K
Q511 2SC2412K
Q512 2SC2412K
Q513 2SC2412K
Q515 2SA1037K
Q516 2SA1037K
Q517 2SA1037K
Q519 2SC2412K
Q520 2SA1037K
Q521 2SA1037K
D515 MTZJ9.1C
D516 MTZJ9.1C
D517 MTZJ9.1C
D503 1SS254
D504 1SS254
D507 1SS254
D508 1SS254
D513 1SS254
D509 MTZJ9.1C
D510 MTZJ9.1C
D511 MTZJ9.1C
X501
X502 503F30
K501
K554
L507 100
SERVICE
H. DRIVE
H. BLK

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 SIGNAL SUB P.W.B.

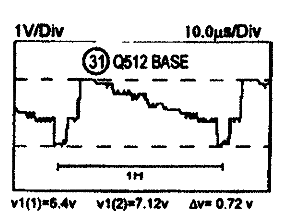
Circuit No.	Pin No.	Voltage DC
I501	1	3.0
	2	1.2
	3	4.1
	4	2.3
	5	2.6
	6	2.6
	7	0
	8	4.2
	9	4.2
	10	4.2
	11	2.1
	12	5.2
	13	0
	14	0
	15	2.8
	16	6.3
	17	0.5
	18	4.5
	19	0
	20	7.6
	21	6.2
	22	9.1
	23	1.5
	24	4.5
	25	1.4
	26	0
	27	4.9
	28	4.9
	29	0
	30	0
	31	4.7
	32	0
	33	3.5
	34	3.5
	35	3.5
	36	0
	37	3.5
	38	3.5

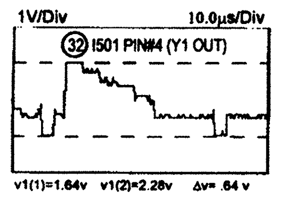
Circuit No.	Pin No.	Voltage DC
I503	1	4.2
	2	0
	3	3.5
	4	0
	5	3.2
	6	3.2
	7	0
	8	3.9
	9	3.9
	10	0
	11	3.9
	12	0
	13	9.4
	14	3.9
	15	0
	16	3.9

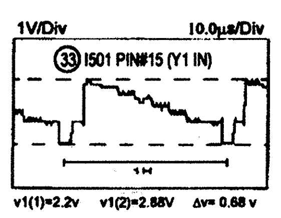
Circuit No.	Pin No.	Voltage DC
I501	39	3.5
	40	9.1
	41	3.2
	42	2.8
	43	2.8
	44	0
	45	5.7
	46	9.1
	47	0
	48	3.7
	49	5.8
	50	5.3
	51	5.1
	52	5.1
	53	6.8
	54	6.7
	55	3.1
	56	3.1

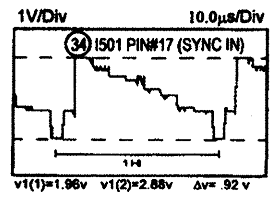
Circuit No.	Pin Name	Voltage DC
Q500	E	8.1
	B	8.5
	C	9.3
Q501	1	0
	2	3.1
	3	3.5
	4	1.3
	5	3.1
	6	3.5
Q502	1	1.2
	2	3.1
	3	0
	4	0.7
	5	0
Q503	E	0.5
	B	1.3
	C	9.5
Q505	E	3.2
	B	4.1
	C	9.5
Q506	E	0
	B	3.1
	C	0
Q509	E	3.4
	B	4.1
	C	9.4
Q510	E	0
	B	0
	C	9.3

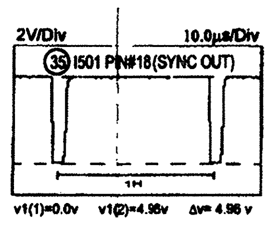
Circuit No.	Pin Name	Voltage DC
Q511	E	2.9
	B	3.5
	C	9.4
Q512	E	6.1
	B	6.8
	C	9.3
Q513	E	2.7
	B	3.4
	C	9.3
Q515	E	3.4
	B	2.8
	C	0
Q516	E	3.4
	B	3.1
	C	0
Q517	E	3.8
	B	3.2
	C	0
Q519	E	0
	B	0.3
	C	0
Q520	E	2.1
	B	6.4
	C	0
Q521	E	1.9
	B	1.3
	C	0

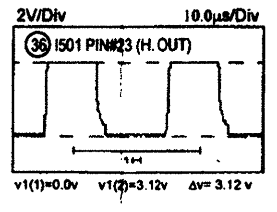


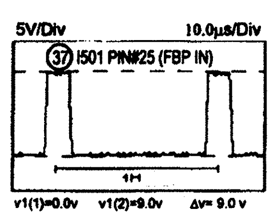


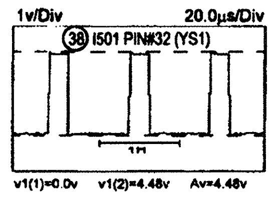


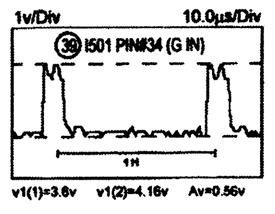


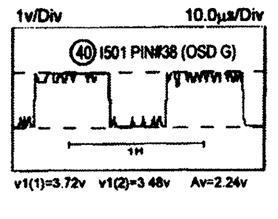


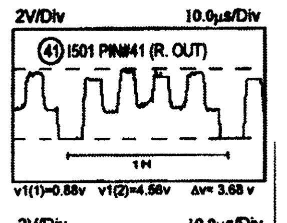


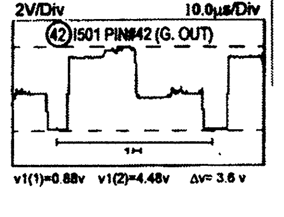


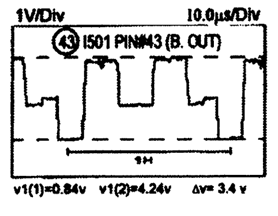


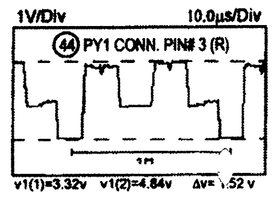


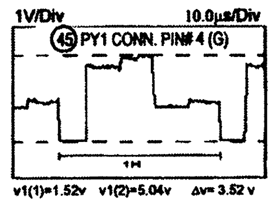


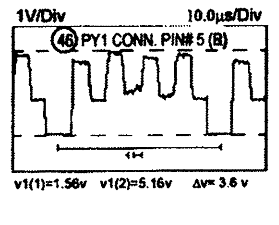












PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

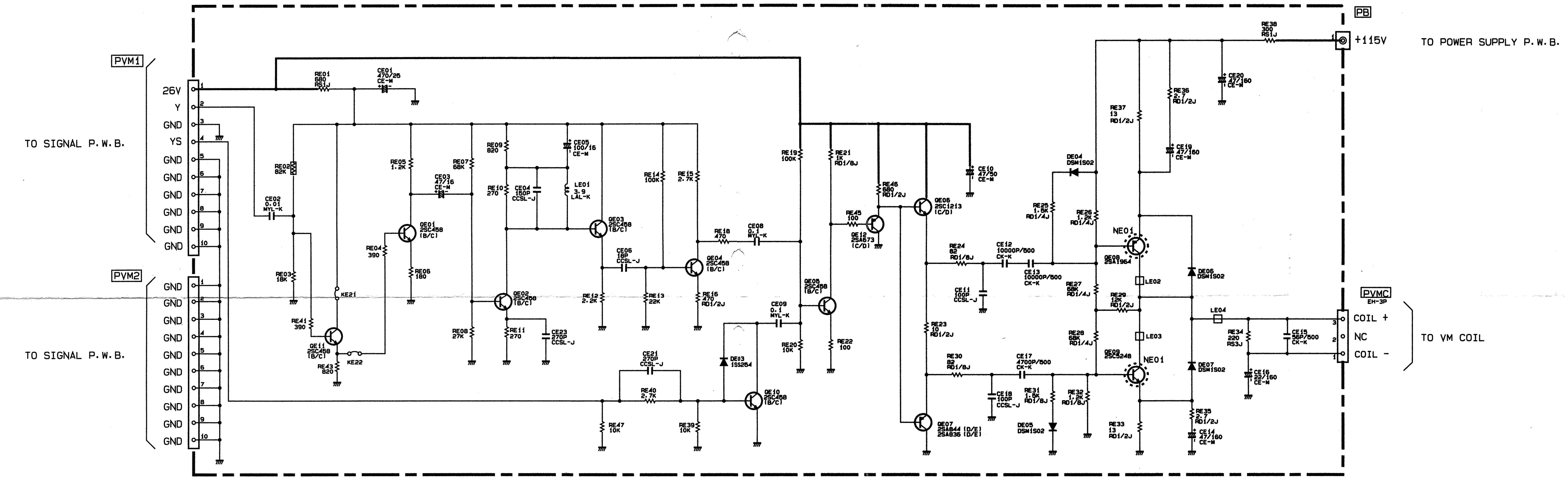
BASIC CIRCUIT DIAGRAM

Circuit No.	Pin Name	Voltage DC
QE01	E	1.4
	B	2.1
	C	7.9
QE02	E	1.8
	B	2.6
	C	6.5
QE03	E	5.8
	B	6.5
	C	12.18

Circuit No.	Pin Name	Voltage DC
QE04	E	1.2
	B	1.9
	C	5.26
QE05	E	0.9
	B	1.6
	C	13.1
QE06	E	13.5
	B	13.6
	C	25.1

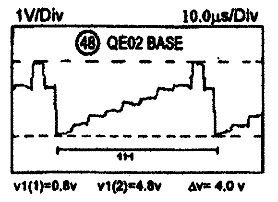
Circuit No.	Pin Name	Voltage DC
QE07	E	13.4
	B	13.6
	C	0
QE08	E	115.4
	B	115.1
	C	58.7
QE09	E	0.3
	B	0.2
	C	58.3

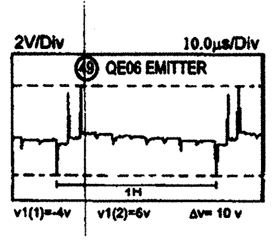
Circuit No.	Pin Name	Voltage DC
QE10	E	0
	B	0
	C	0.1
QE11	E	2.1
	B	2.7
	C	10.1
QE12	E	14.6
	B	14
	C	0

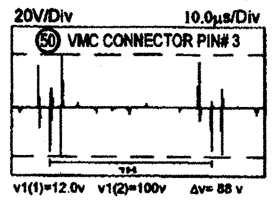

PVM1
26V
Y
GND
YS
GND
TO SIGNAL P.W.B.
PVM2
TO SIGNAL P.W.B.
RE01 680 RS1J
CE01 470/25 CE-M
RE02 82K
CE02 0.01 MYL-K
RE03 18K
KE21
KE22
RE41 390
QE11 2SC458 (B/C)
RE43 820
RE04 390
QE01 2SC458 (B/C)
RE05 1.2K
RE06 180
CE03 47/16 CE-M
RE07 68K
RE08 27K
RE09 820
RE10 270
CE04 150P CCSL-J
CE05 100/16 CE-M
LE01 3.9 LAL-K
QE02 2SC458 (B/C)
RE11 270
CE23 270P CCSL-J
QE03 2SC458 (B/C)
CE06 18P CCSL-J
RE12 2.2K
RE13 22K
RE14 100K
RE15 2.7K
QE04 2SC458 (B/C)
RE16 470 RD1/2J
RE18 470
CE08 0.1 MYL-K
CE09 0.1 MYL-K
DE03 1SS254
CE21 270P CCSL-J
RE40 2.7K
RE47 10K
RE39 10K
QE10 2SC458 (B/C)
RE19 100K
RE20 10K
QE05 2SC458 (B/C)
RE22 100
RE21 1K RD1/8J
RE45 100
QE12 2SA673 (C/D)
RE46 680 RD1/2J
QE06 2SC1213 (C/D)
CE10 47/50 CE-M
RE23 10 RD1/2J
QE07 2SA844 (D/E) 2SA836 (D/E)
RE24 82 RD1/8J
CE11 100P CCSL-J
CE12 10000P/500 CK-K
CE13 10000P/500 CK-K
RE30 82 RD1/8J
CE18 100P CCSL-J
CE17 4700P/500 CK-K
RE31 1.5K RD1/8J
DE05 DSM1S02
RE32 1.2K RD1/8J
RE25 1.5K RD1/4J
DE04 DSM1S02
RE26 1.2K RD1/4J
RE27 68K RD1/4J
RE28 68K RD1/4J
RE29 12K RD1/2J
NE01
QE08 2SA1964
LE02
LE03
QE09 2SC5248
RE33 13 RD1/2J
RE37 13 RD1/2J
RE36 2.7 RD1/2J
CE19 47/160 CE-M
CE20 47/160 CE-M
RE38 300 RS1J
PB
+115V
TO POWER SUPPLY P.W.B.
DE06 DSM1S02
DE07 DSM1S02
RE35 2.7 RD1/2J
CE14 47/160 CE-M
LE04
RE34 220 RS3J
CE15 56P/500 CK-K
CE16 22/160 CE-M
PVMC
EH-3P
COIL +
NC
COIL -
TO VM COIL

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 VM P.W.B.

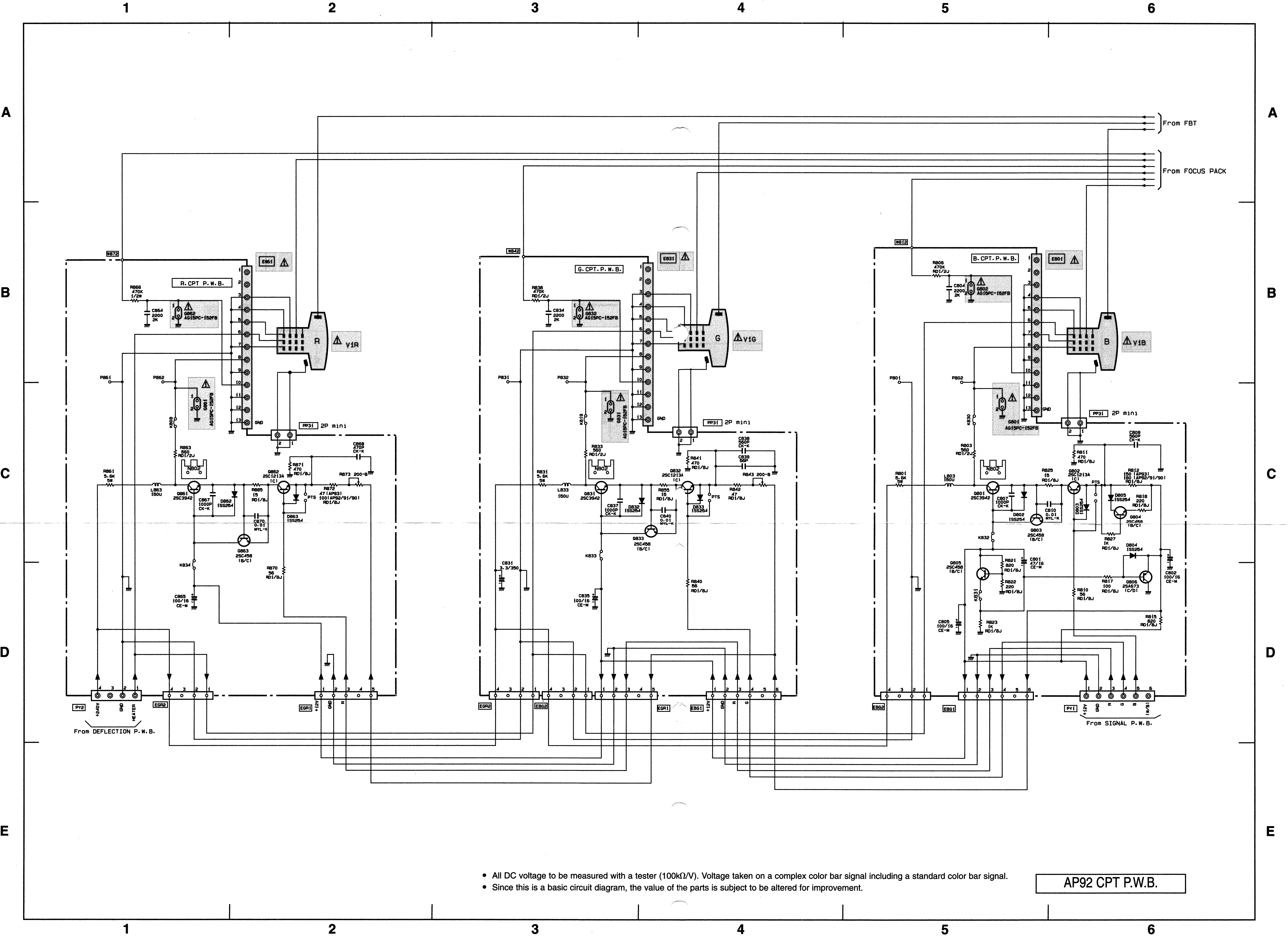






BASIC CIRCUIT DIAGRAM

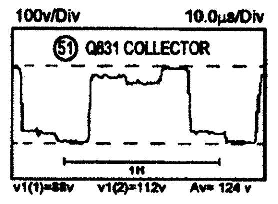
PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

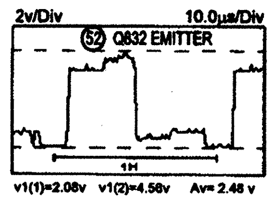

1
2
3
4
5
6
A
B
C
D
E
From FBT
From FOCUS PACK
R.CPT P.W.B.
G.CPT P.W.B.
B.CPT P.W.B.
V1R
V1G
V1B
R
G
B
E861
E831
E801
W872
W842
W812
R866 470K 1/2W
R836 470K RD1/2J
R806 470K RD1/2J
C864 2200 2K
C834 2200 2K
C804 2200 2K
G862 AG15PC-152FB
G832 AG15PC-152FB
G802 AG15PC-152FB
G861 AG15PC-152FB
G831 AG15PC-152FB
G801 AG15PC-152FB
GND
PP31 2P mini
P861
P862
P831
P832
P801
P802
K808
K819
K830
N802
R863 560 RD1/2J
R833 560 RD1/2J
R803 560 RD1/2J
R861 5.6K 5W
R831 5.6K 5W
R801 5.6K 5W
L863 150U
L833 150U
L803 150U
Q861 2SC3942
Q831 2SC3942
Q801 2SC3942
Q862 2SC1213A (C)
Q832 2SC1213A (C)
Q802 2SC1213A (C)
Q863 2SC458 (B/C)
Q833 2SC458 (B/C)
Q803 2SC458 (B/C)
Q804 2SC458 (B/C)
Q805 2SC458 (B/C)
Q806 2SA673 (C/D)
C867 1000P CK-K
C837 1000P CK-K
C807 1000P CK-K
D862 1SS254
D832 1SS254
D863 1SS254
D833 1SS254
D802 1SS254
D803 1SS254
D804 1SS254
D805 1SS254
R865 15 RD1/8J
R835 15 RD1/8J
R825 15 RD1/8J
C870 0.01 MYL-K
C840 0.01 MYL-K
C810 0.01 MYL-K
R871 470 RD1/8J
R841 470 RD1/8J
R811 470 RD1/8J
C868 470P CK-K
C838 560P CK-K
C808 560P CK-K
C839 56P
R872 47 (AP93) 100 (AP92/91/90) RD1/8J
R842 47 RD1/8J
R812 150 (AP93) 180 (AP92/91/90) RD1/8J
R873 200-B
R843 200-B
PTS
K834
K833
K832
K831
R870 56 RD1/8J
R840 56 RD1/8J
R810 56 RD1/8J
C865 100/16 CE-M
C835 100/16 CE-M
C805 100/16 CE-M
C831 3.3/350
R821 820 RD1/8J
R822 220 RD1/8J
R823 1K RD1/8J
C801 47/16 CE-M
C802 100/16 CE-M
R817 100 RD1/8J
R818 220 RD1/8J
R827 1K RD1/8J
R815 820 RD1/8J
PY2
EGR2
EGR1
EBG2
EBG1
PY1
+240V
GND
HEATER
+12V
From DEFLECTION P.W.B.
From SIGNAL P.W.B.
(B/B)

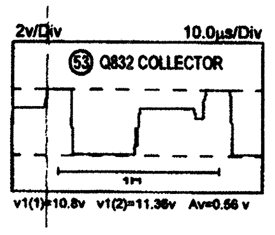
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 CPT P.W.B.

Circuit No.	Pin Name	Voltage DC
Q801	E	11.2
	B	11.7
	C	134.5
Q802	E	3.4
	B	3.8
	C	10.9
Q803	E	10.9
	B	11.1
	C	11.7
Q804	E	2.9
	B	3.4
	C	3.2
Q805	E	1.8
	B	2.5
	C	11.7
Q806	E	1.5
	B	1.8
	C	0
Q831	E	11.15
	B	11.7
	C	138.2
Q832	E	3.4
	B	3.8
	C	10.9
Q833	E	10.9
	B	11.2
	C	11.7
Q861	E	11.2
	B	11.7
	C	155.9
Q862	E	3.3
	B	3.8
	C	11.1
Q863	E	11.1
	B	11.2
	C	11.7

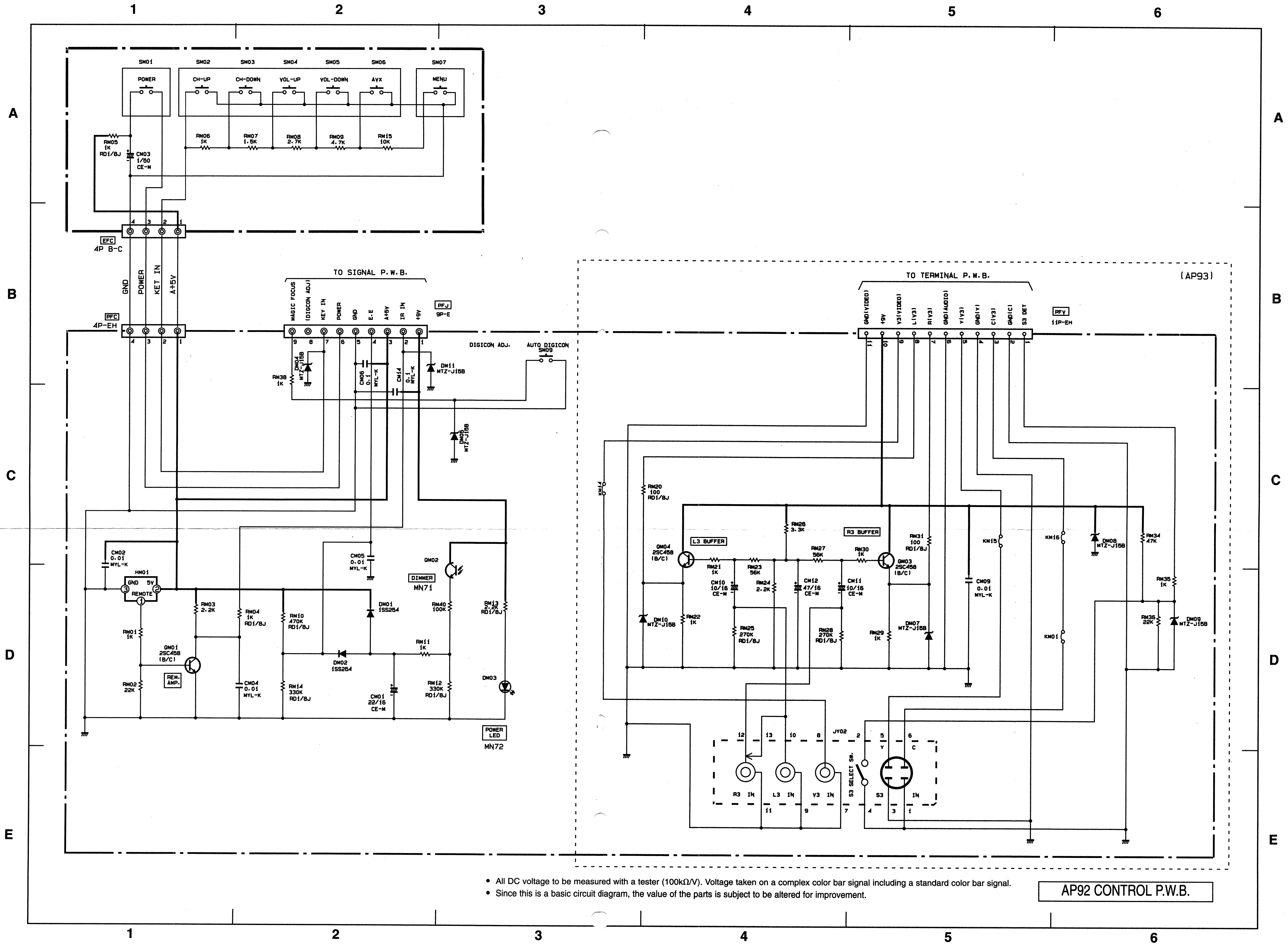






PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

BASIC CIRCUIT DIAGRAM

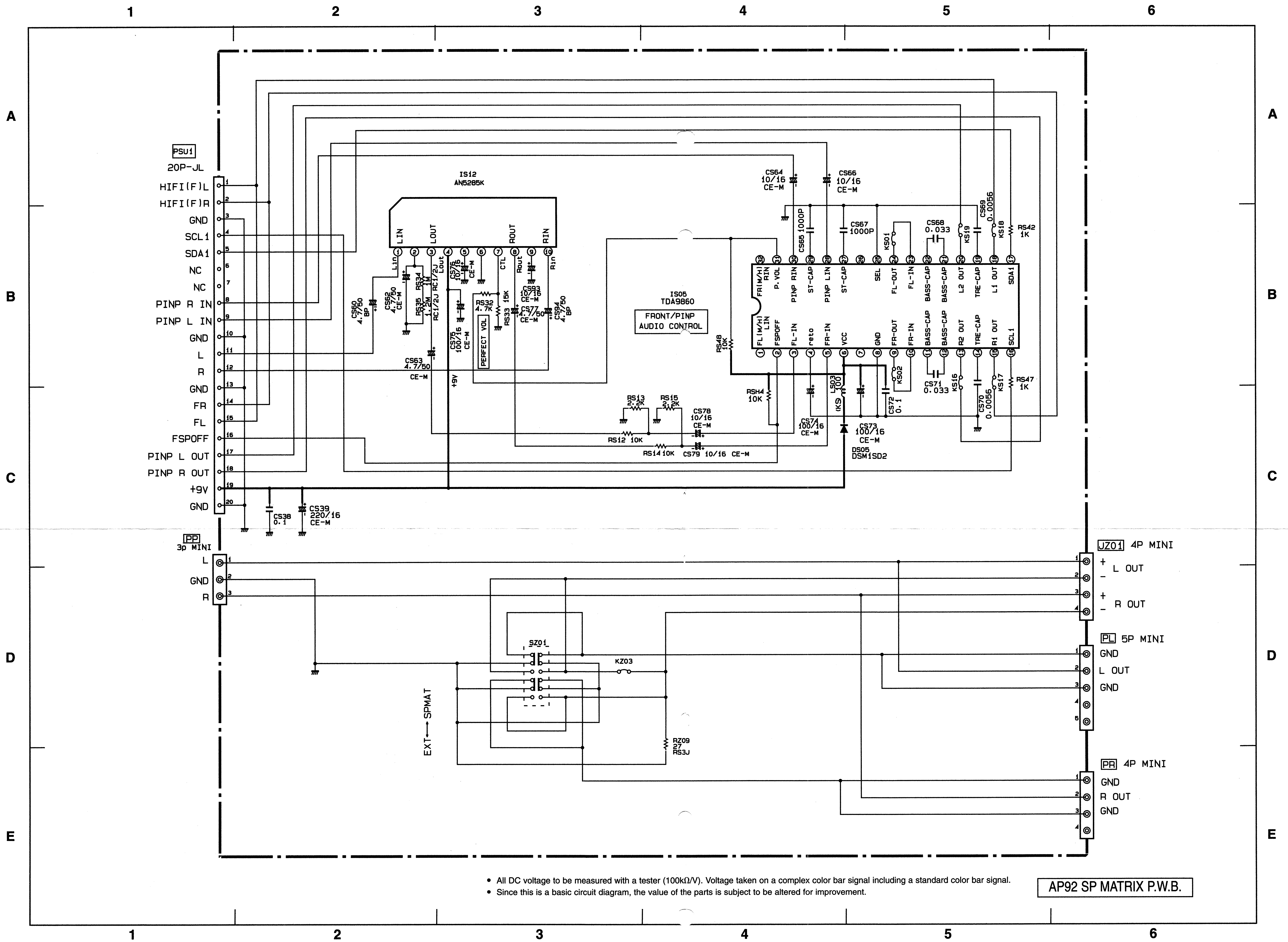

1
2
3
4
5
6
A
B
C
D
E
SM01
SM02
SM03
SM04
SM05
SM06
SM07
POWER
CH-UP
CH-DOWN
VOL-UP
VOL-DOWN
AVX
MENU
RM05 1K RD1/8J
CM03 1/50 CE-M
RM06 1K
RM07 1.5K
RM08 2.7K
RM09 4.7K
RM15 10K
EFC 4P B-C
GND
POWER
KET IN
A+5V
PFC 4P-EH
TO SIGNAL P.W.B.
MAGIC FOCUS
(DIGCON ADJ)
KEY IN
POWER
GND
E.E
A+5V
IR IN
+9V
PFJ 9P-E
RM38 1K
DM04 MTZ-J15B
CM06 0.1 MYL-K
CM14 0.1 MYL-K
DM11 MTZ-J15B
DIGICON ADJ.
AUTO DIGICON SM09
DM05 MTZ-J15B
CM02 0.01 MYL-K
HM01
GND 5V
REMOTE
RM01 1K
RM02 22K
RM03 2.2K
QM01 2SC458 (B/C)
REM. AMP.
RM04 1K RD1/8J
CM04 0.01 MYL-K
RM10 470K RD1/8J
RM14 330K RD1/8J
CM05 0.01 MYL-K
DIMMER MN71
DM01 1SS254
DM02 1SS254
CM01 22/16 CE-M
QM02
RM40 100K
RM11 1K
RM12 330K RD1/8J
RM13 2.2K RD1/8J
DM03
POWER LED MN72
TO TERMINAL P.W.B.
(AP93)
GND(VIDEO)
+9V
V3(VIDEO)
L(V3)
R(V3)
GND(AUDIO)
Y(V3)
GND(Y)
C(V3)
GND(C)
S3 DET
PFV 11P-EH
RM20 100 RD1/8J
RM26 3.3K
L3 BUFFER
R3 BUFFER
QM04 2SC458 (B/C)
QM03 2SC458 (B/C)
RM21 1K
RM23 56K
RM27 56K
RM30 1K
RM31 100 RD1/8J
CM10 10/16 CE-M
RM24 2.2K
CM12 47/16 CE-M
CM11 10/16 CE-M
DM10 MTZ-J15B
RM22 1K
RM25 270K RD1/8J
RM28 270K RD1/8J
RM29 1K
DM07 MTZ-J15B
CM09 0.01 MYL-K
KM15
KM16
KM01
DM08 MTZ-J15B
RM34 47K
RM35 1K
RM36 22K
DM09 MTZ-J15B
JY02
R3 IN
L3 IN
V3 IN
S3 SELECT SW.
S3
IN
Y
C

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP92 CONTROL P.W.B.

BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


1
2
3
4
5
6
A
B
C
D
E
PSU1
20P-JL
HIFI(F)L
HIFI(F)R
GND
SCL1
SDA1
NC
NC
PINP R IN
PINP L IN
GND
L
R
GND
FR
FL
FSPOFF
PINP L OUT
PINP R OUT
+9V
GND
CS38 0.1
CS39 220/16 CE-M
IS12
AN5285K
LIN
LOUT
ROUT
RIN
Lin
Lout
CTL
Rout
Rin
CS60 4.7/50 BP
CS62 4.7/50 CE-M
RS34 1M
RS35 1.2M
RC1/2J
RC1/2J
CS76 10/16 CE-M
CS75 100/16 CE-M
CS63 4.7/50 CE-M
+9V
RS32 4.7K
RS33 15K
PERFECT VOL
CS93 10/16 CE-M
CS77 4.7/50 CE-M
CS94 4.7/50 BP
IS05
TDA9860
FRONT/PINP
AUDIO CONTROL
CS64 10/16 CE-M
CS66 10/16 CE-M
CS65 1000P
CS67 1000P
KS01
CS68 0.033
KS19
CS69 0.0056
KS18
RS42 1K
FR(M/H) RIN
P. VOL
PINP RIN
ST-CAP
PINP LIN
ST-CAP
SEL
FL-OUT
FL-IN
BASS-CAP
BASS-CAP
L2 OUT
TRE-CAP
L1 OUT
SDA1
FL(M/H) LIN
FSPOFF
FL-IN
reto
FR-IN
VCC
GND
FR-OUT
FR-IN
BASS-CAP
BASS-CAP
R2 OUT
TRE-CAP
R1 OUT
SCL1
RS48 10K
RSH4 10K
KS02
CS71 0.033
KS16
CS70 0.0056
KS17
RS47 1K
RS13 2.2K
RS15 2.2K
CS78 10/16 CE-M
RS12 10K
RS14 10K
CS79 10/16 CE-M
CS74 100/16 CE-M
LS03 100 (KS)
CS72 0.1
CS73 100/16 CE-M
DS05 DSM1SD2
PP
3p MINI
L
GND
R
SZ01
KZ03
EXT ⟷ SPMAT
RZ09 27 RS3J
JZ01 4P MINI
+ L OUT -
+ R OUT -
PL 5P MINI
GND
L OUT
GND
PR 4P MINI
GND
R OUT
GND

Circuit No.	Pin No.	Voltage DC
IS05	1	4.3
	2	0
	3	4.3
	4	8.5
	5	4.3
	6	8.6
	7	4.3
	8	0
	9	4.3
	10	4.3
	11	4.3
	12	4.3
	13	4.3
	14	4.3
	15	4.3
	16	4.9
	17	4.9
	18	4.3
	19	4.3
	20	4.3
	21	4.3
	22	4.3
	23	4.3
	24	4.3
	25	0
	26	4.3
	27	4.3
	28	4.3
	29	4.3
	30	4.3
	31	0
	32	4.3

Circuit No.	Pin No.	Voltage DC
IS12	1	4.7
	2	1.2
	3	4.7
	4	1.4
	5	4.7
	6	0
	7	0
	8	4.7
	9	2
	10	4.7

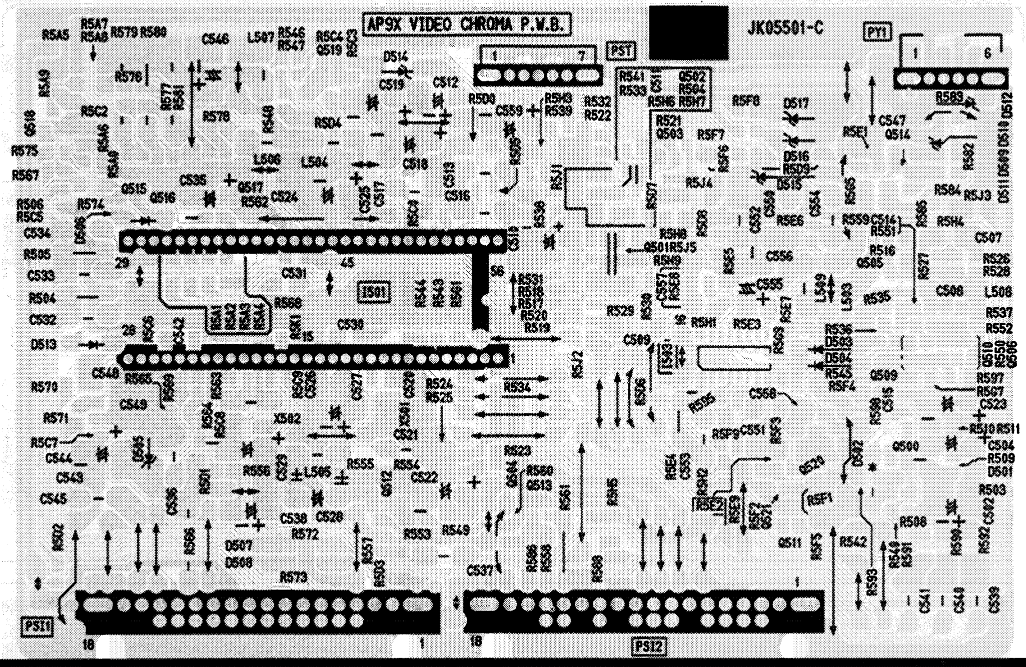
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

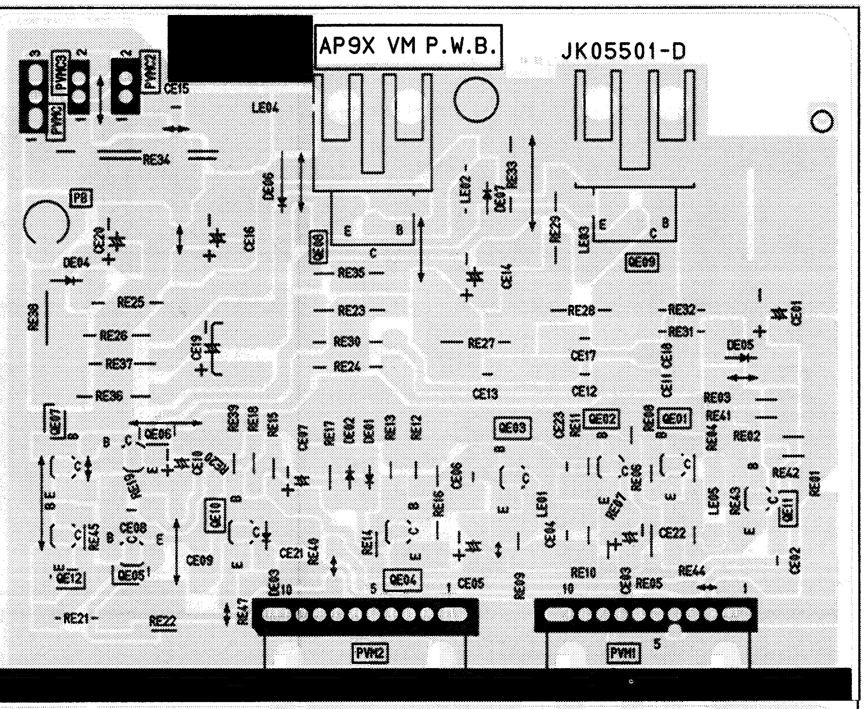
AP92 SP MATRIX P.W.B.

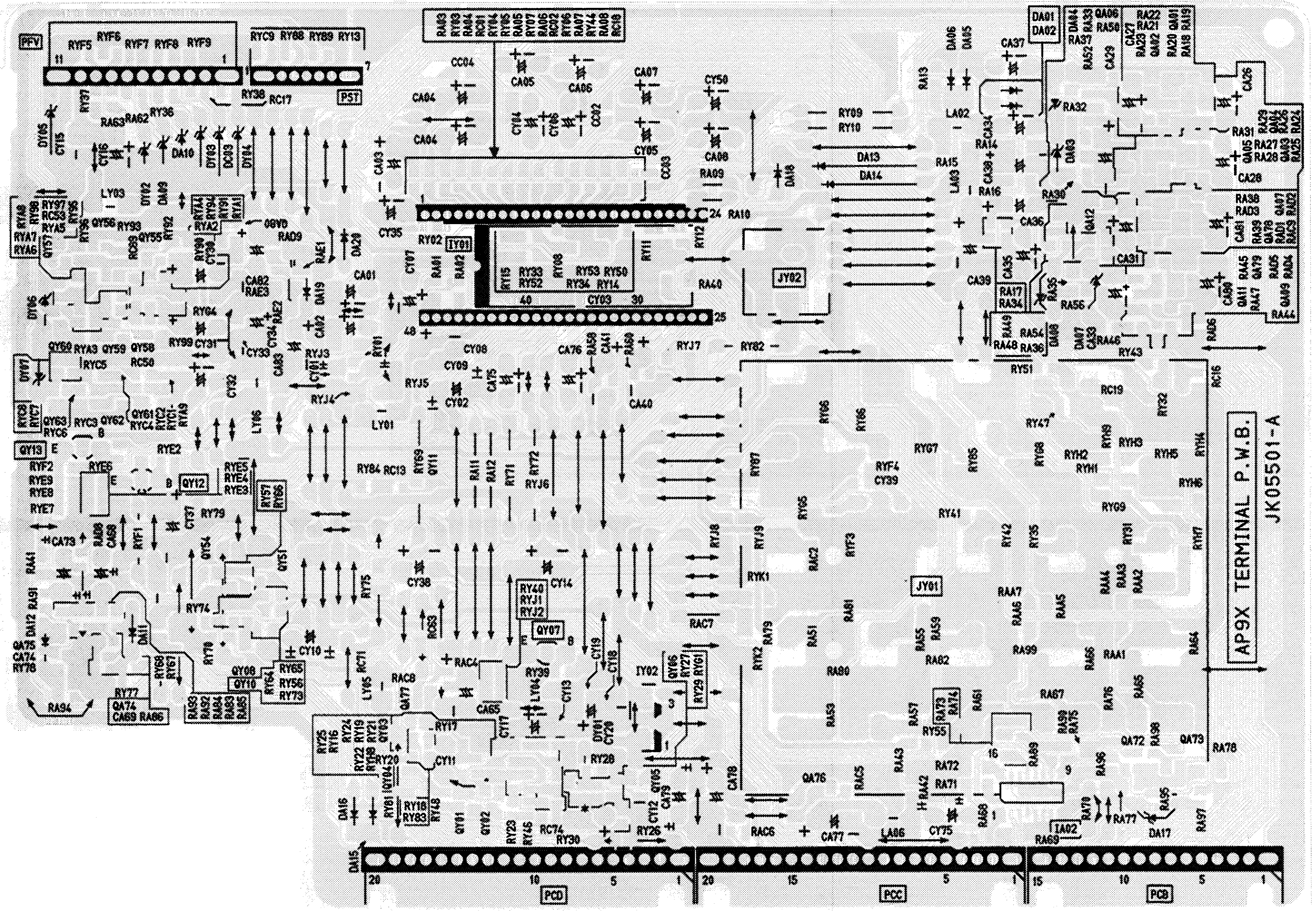
VIDEO CHROMA P.W.B.
TERMINAL P.W.B.

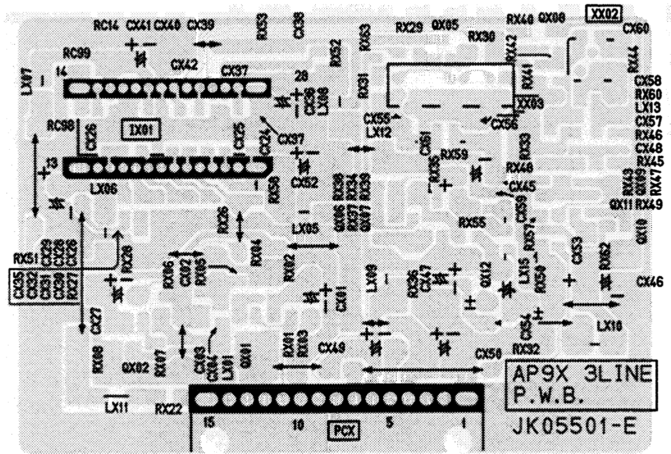
VM P.W.B.
3 LINE P.W.B.

PRINTED CIRCUIT BOARD


AP9X VIDEO CHROMA P.W.B.
JK05501-C
PST
PY1
PSI1
PSI2
IS01

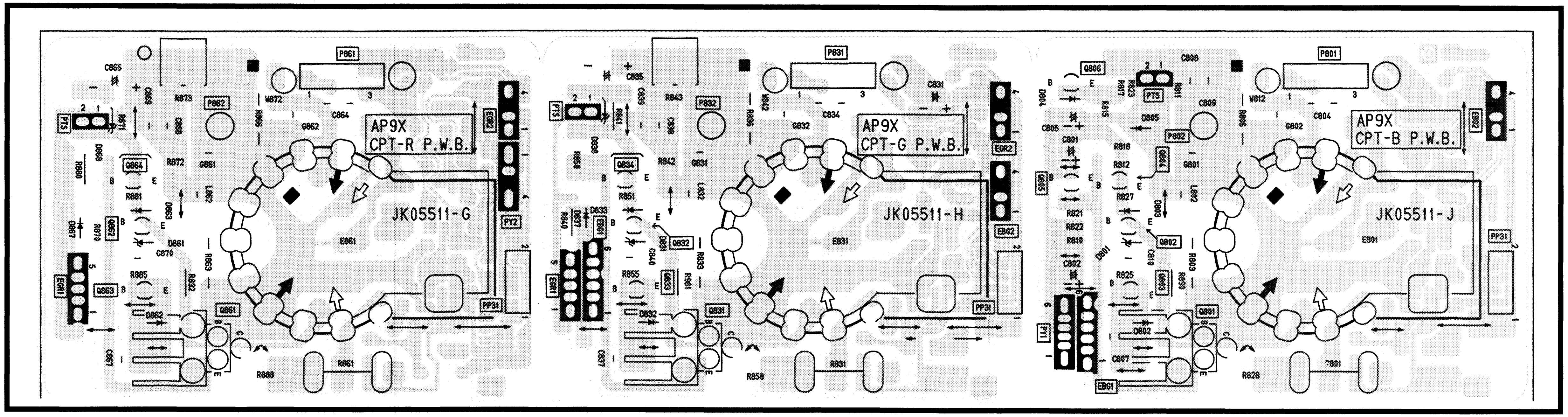

AP9X VM P.W.B.
JK05501-D
PB
PVM1
PVM2
PVM3
PVM4


AP9X TERMINAL P.W.B.
JK05501-A
PFV
PST
IY01
JY01
JY02
PCD
PCC
PCB

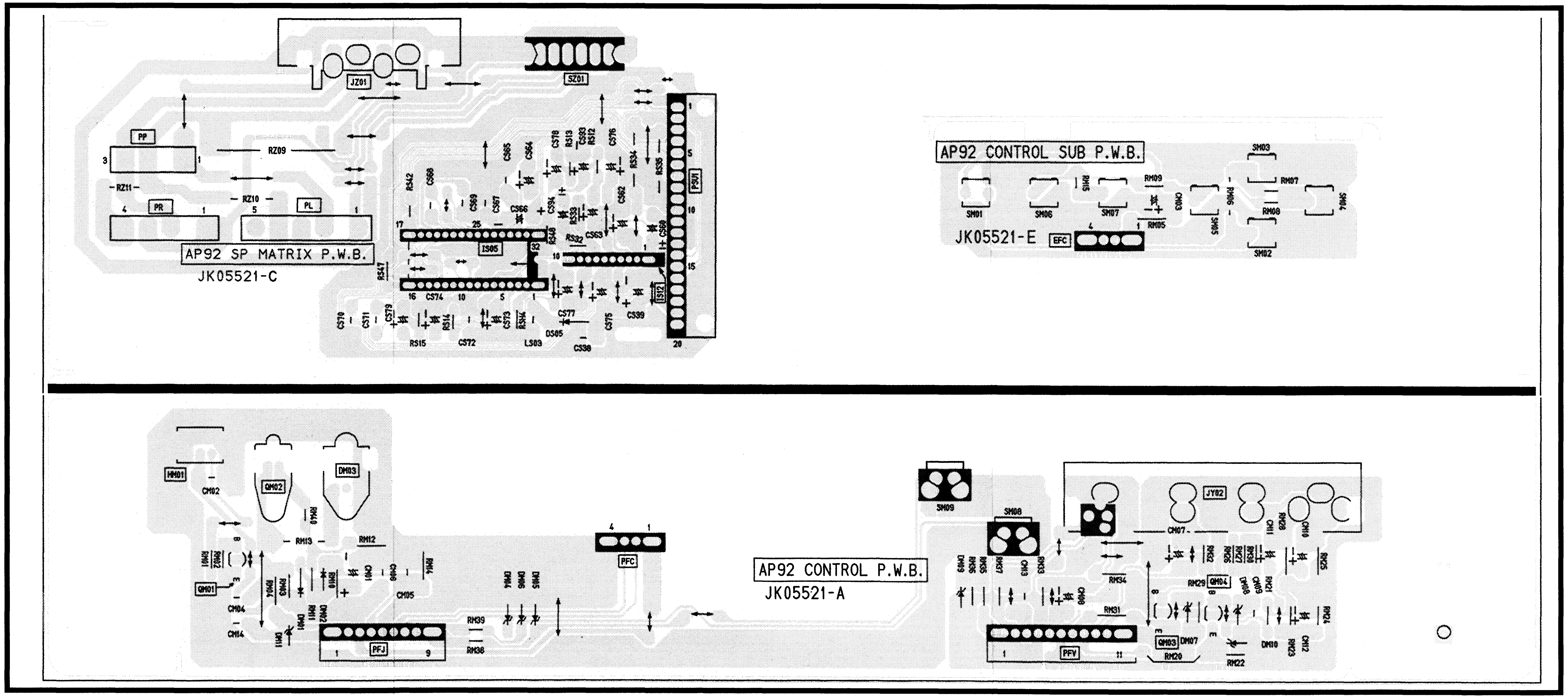

AP9X 3LINE
P.W.B.
JK05501-E
IX01
PCX

PRINTED CIRCUIT BOARD

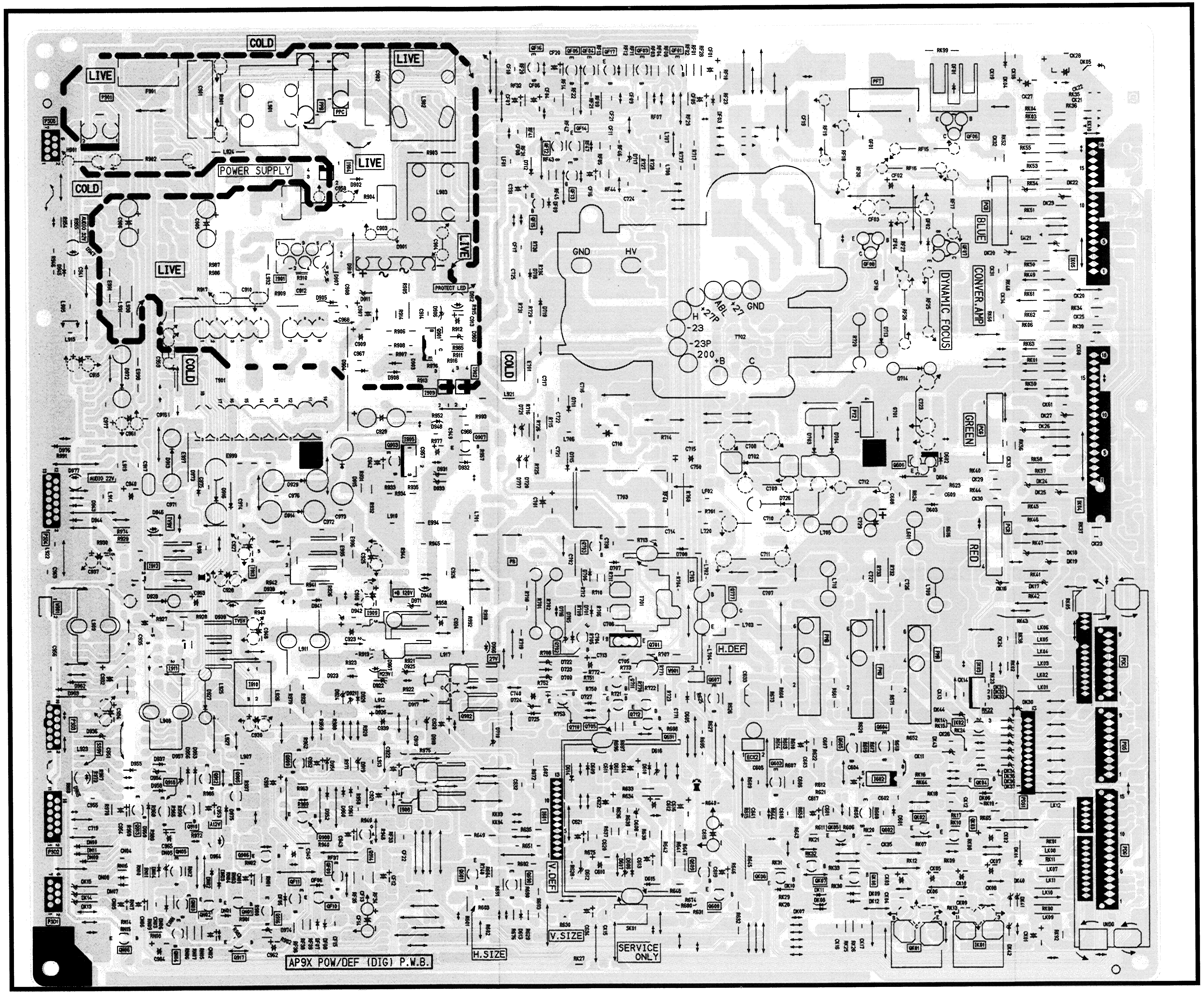
CPT-R P.W.B. CPT-G P.W.B.
CPT-B P.W.B.


AP9X
CPT-R P.W.B.
JK05511-G
AP9X
CPT-G P.W.B.
JK05511-H
AP9X
CPT-B P.W.B.
JK05511-J
P861
P831
P801
PP31
PY2
PY1
EGR1
EGR2
EBG1
EBG2
PT5
PT3

CONTROL SUB P.W.B. SP MATRIX P.W.B.
CONTROL P.W.B.

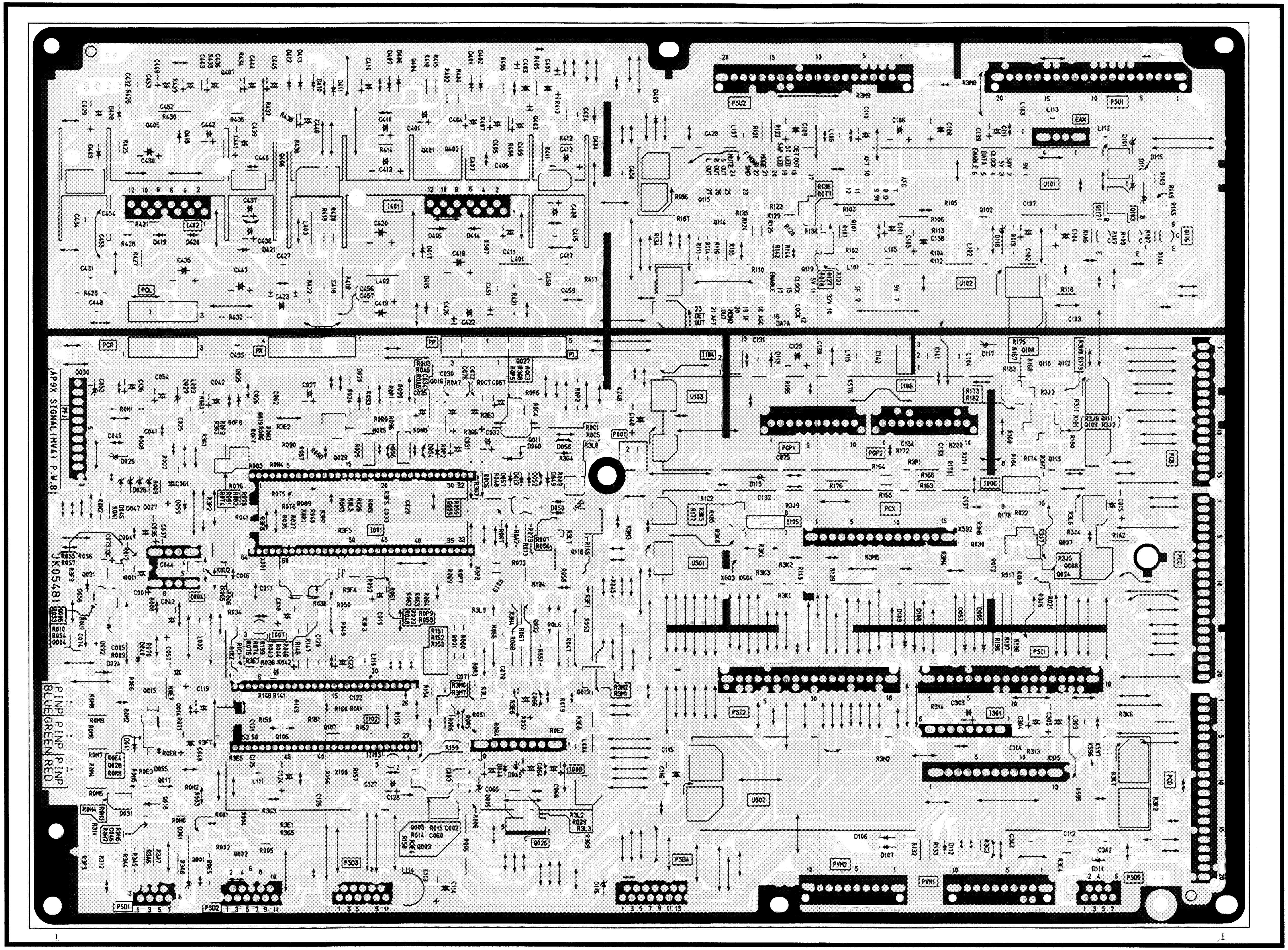

AP92 SP MATRIX P.W.B.
JK05521-C
AP92 CONTROL SUB P.W.B.
JK05521-E
AP92 CONTROL P.W.B.
JK05521-A
JZ01
SZ01
PP
PR
PL
PSU1
IS05
IS12
EFC
PFC
PFJ
PFV
JY02
SM01
SM02
SM03
SM04
SM05
SM06
SM07
SM08
SM09
HM01
QM02
DM03
QM01
QM03
QM04

PRINTED CIRCUIT BOARD

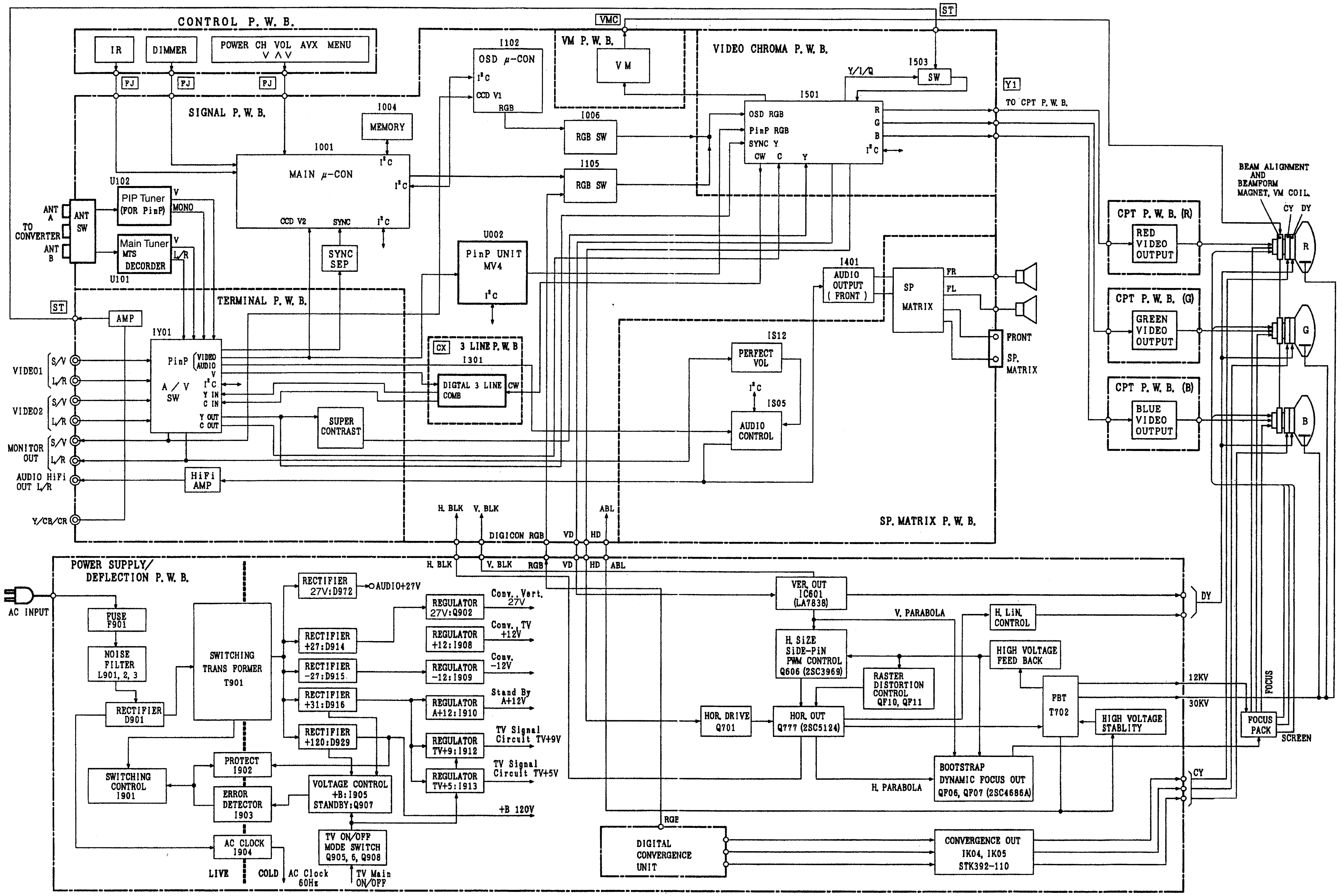

COLD
LIVE
LIVE
LIVE
POWER SUPPLY
COLD
LIVE
LIVE
COLD
PROTECT LED
COLD
GND
HV
ABL
GND
H
+27
+27P
-23
-23P
200
+B
C
BLUE
DYNAMIC FOCUS
CONVER.AMP
GREEN
RED
AUDIO 22V
H.DEF
V.DEF
V.SIZE
H.SIZE
SERVICE ONLY
AP9X POW/DEF (DIG) P.W.B.

SIGNAL P.W.B.

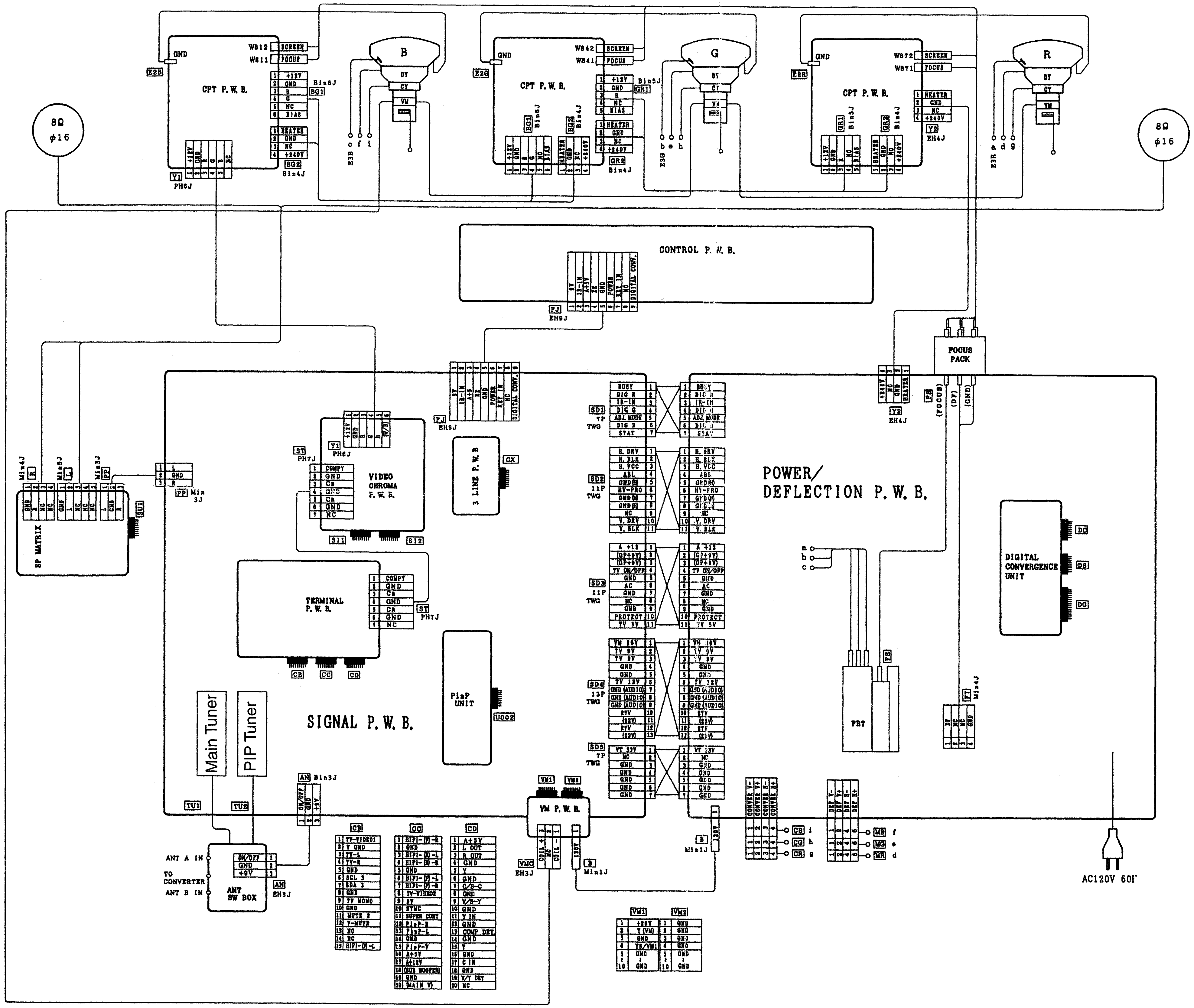
PRINTED CIRCUIT BOARD


AP9X SIGNAL (MV4) P.W.B
JK05481
PINP BLUE
PINP GREEN
PINP RED
PSU2
PSU1
EAN
U101
U102
U103
U301
U002
I101
I102
I103
I104
I105
I106
I1007
I1001
I1006
I1008
I1301
I1401
I1402
PCL
PCR
PR
PP
PL
PF1
PCB
PCC
PCD
PCX
PGP1
PGP2
P001
PSI1
PSI2
PSD1
PSD2
PSD3
PSD4
PSD5
PYM1
PYM2
Q026
DET OUT
MUTE
MODE
AFT
AGC
DATA
CLOCK
ENABLE
LOCK
SW

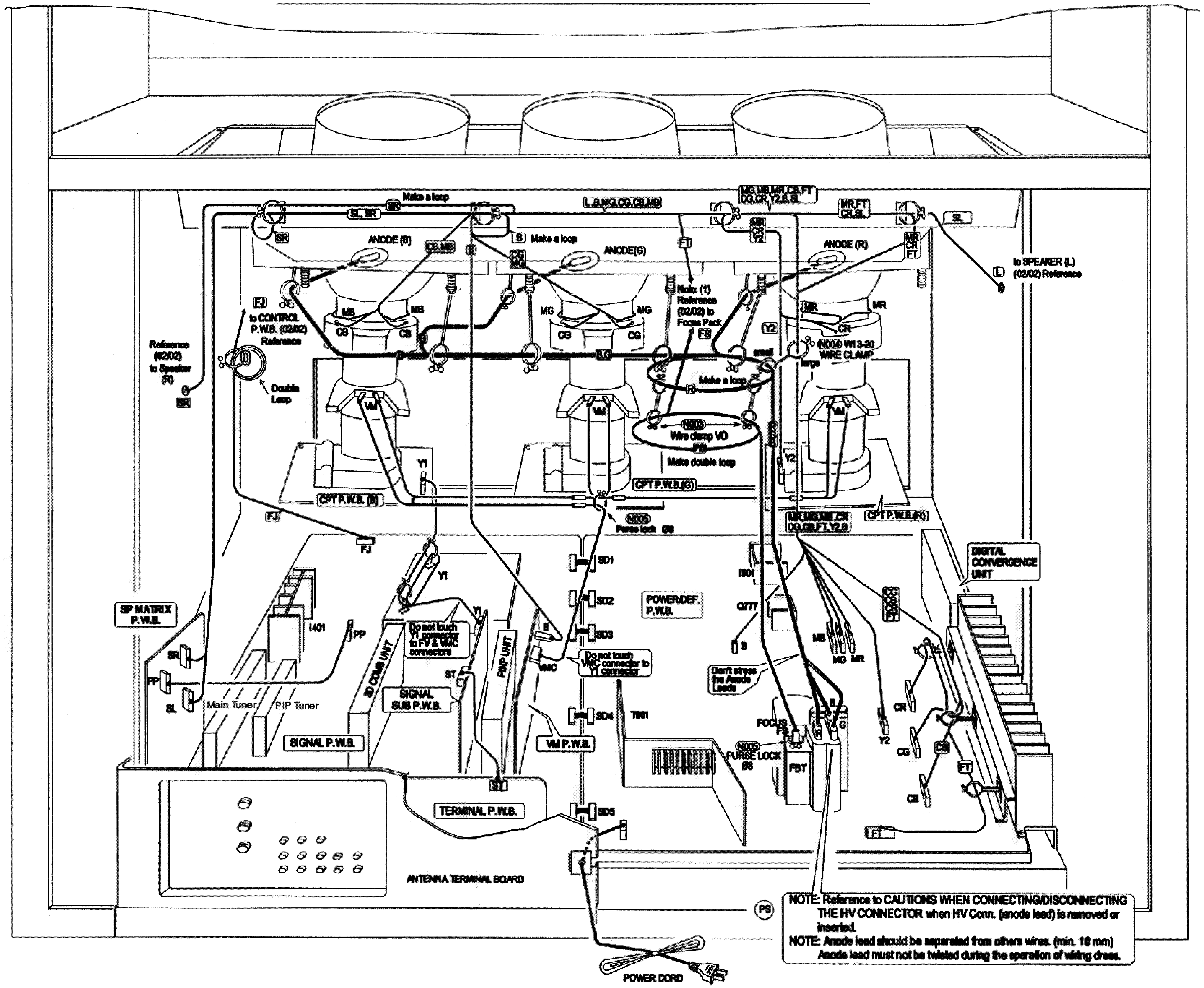
AP92 BLOCK DIAGRAM


CONTROL P. W. B.
IR
DIMMER
POWER CH VOL AVX MENU
V ∧ V
FJ
FJ
FJ
SIGNAL P. W. B.
1004
MEMORY
1001
MAIN μ-CON
I²C
I²C
CCD V2
SYNC
I²C
SYNC SEP
1102
OSD μ-CON
I²C
CCD V1
RGB
VMC
VM P. W. B.
V M
1006
RGB SW
1105
RGB SW
ST
VIDEO CHROMA P. W. B.
Y/I/Q
1503
SW
1501
OSD RGB
PinP RGB
SYNC Y
CW C Y
R
G
B
I²C
Y1
TO CPT P. W. B.
U102
PIP Tuner
(FOR PinP)
V
MONO
Main Tuner
MTS
DECORDER
V
L/R
U101
ANT A
TO CONVERTER
ANT B
ANT SW
U002
PinP UNIT
MV4
I²C
ST
AMP
TERMINAL P. W. B.
IY01
PinP
VIDEO
AUDIO
A / V SW
V
I²C
Y IN
C IN
Y OUT
C OUT
VIDEO1
S/V
L/R
VIDEO2
S/V
L/R
MONITOR OUT
S/V
L/R
AUDIO HiFi OUT L/R
HiFi AMP
Y/CB/CR
SUPER CONTRAST
CX
3 LINE P. W. B
1301
DIGTAL 3 LINE COMB
CW
1401
AUDIO OUTPUT (FRONT)
SP MATRIX
FR
FL
FRONT
SP. MATRIX
1S12
PERFECT VOL
I²C
1S05
AUDIO CONTROL
SP. MATRIX P. W. B.
BEAM ALIGNMENT AND BEAMFORM MAGNET, VM COIL.
CY
DY
CPT P. W. B. (R)
RED VIDEO OUTPUT
R
CPT P. W. B. (G)
GREEN VIDEO OUTPUT
G
CPT P. W. B. (B)
BLUE VIDEO OUTPUT
B
H. BLK
V. BLK
ABL
DIGICON RGB
VD
HD
H. BLK
V. BLK
RGB
VD
HD
ABL
POWER SUPPLY/ DEFLECTION P. W. B.
AC INPUT
FUSE F901
NOISE FILTER L901, 2, 3
RECTIFIER D901
SWITCHING TRANS FORMER T901
SWITCHING CONTROL 1901
PROTECT 1902
ERROR DETECTOR 1903
AC CLOCK 1904
LIVE
COLD
AC Clock 60Hz
RECTIFIER 27V:D972
AUDIO+27V
RECTIFIER +27:D914
RECTIFIER -27:D915
RECTIFIER +31:D916
RECTIFIER +120:D929
VOLTAGE CONTROL +B:1905 STANDBY:Q907
TV ON/OFF MODE SWITCH Q905, 6, Q908
TV Main ON/OFF
REGULATOR 27V:Q902
Conv., Vert. 27V
REGULATOR +12:1908
Conv., TV +12V
REGULATOR -12:1909
Conv. -12V
REGULATOR A+12:1910
Stand By A+12V
REGULATOR TV+9:1912
TV Signal Circuit TV+9V
REGULATOR TV+5:1913
TV Signal Circuit TV+5V
+B 120V
VER. OUT IC601 (LA7838)
V. PARABOLA
H. LiN. CONTROL
DY
H. SiZE SiDE-PiN PWM CONTROL Q606 (2SC3969)
RASTER DISTORTION CONTROL QF10, QF11
HIGH VOLTAGE FEED BACK
HOR. DRIVE Q701
HOR. OUT Q777 (2SC5124)
FBT T702
12KV
30KV
HIGH VOLTAGE STABLITY
FOCUS
FOCUS PACK
SCREEN
BOOTSTRAP DYNAMIC FOCUS OUT QF06, QF07 (2SC4686A)
H. PARABOLA
CY
RGB
DIGITAL CONVERGENCE UNIT
CONVERGENCE OUT IK04, IK05 STK392-110

AP92 WIRING CONNECTION DIAGRAM


CPT P.W.B.
B
G
R
8Ω
φ16
CONTROL P.W.B.
FOCUS PACK
POWER/
DEFLECTION P.W.B.
VIDEO CHROMA P.W.B.
3 LINE P.W.B.
TERMINAL P.W.B.
SP MATRIX
PinP UNIT
SIGNAL P.W.B.
Main Tuner
PIP Tuner
ANT A IN
TO CONVERTER
ANT B IN
ANT SW BOX
VM P.W.B.
DIGITAL CONVERGENCE UNIT
FBT
AC120V 60Hz

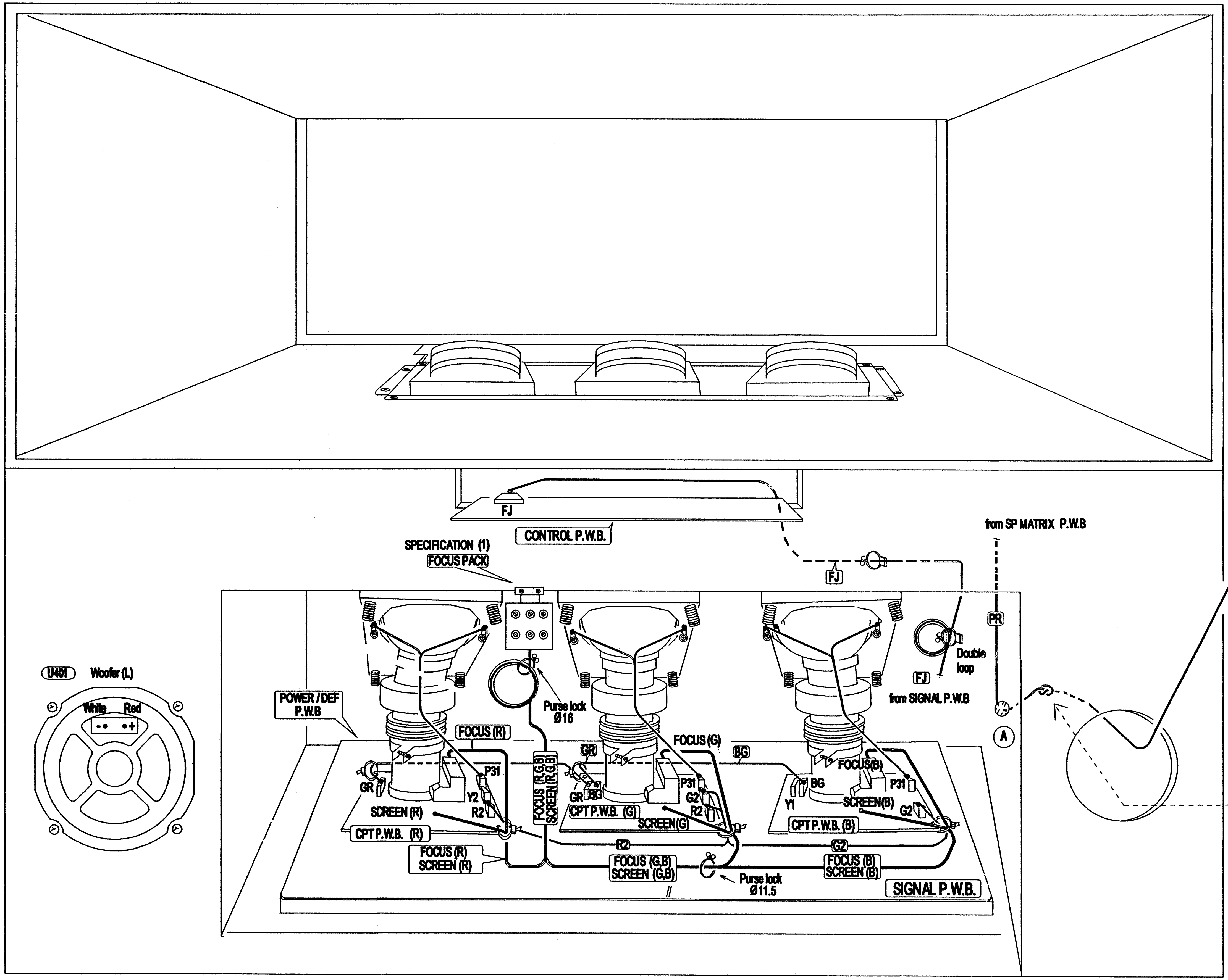
50FX49B WIRING DRAWING


Make a loop
SL, SR
SR
L,B,MG,CG,CB,MB
MG,MB,MR,CB,FT
CG,CR,Y2,B,SL
MR,FT
CR,SL
SL
ANODE (B)
CB,MB
B
Make a loop
CG
MG
ANODE(G)
FT
MR
CR
Y2
ANODE (R)
MR
CR
FT
to SPEAKER (L)
L
(02/02) Reference
FJ
to CONTROL
P.W.B. (02/02)
Reference
Reference
(02/02)
to Speaker
(R)
SR
Double
Loop
MB
MB
CB
CB
MG
MG
CG
CG
Note (1)
Reference
(02/02) to
Focus Pack
FS
Y2
MR
MR
CR
small
(N004) WI 3-20
WIRE CLAMP
large
B,G
R
Make a loop
VM
VM
VM
N003
Wire clamp VD
FS
Make double loop
Y1
Y2
CPT P.W.B.(B)
CPT P.W.B.(G)
CPT P.W.B.(R)
MR,MG,MB,CR
CG,CB,FT,Y2,B
N005
Purse lock
FJ
FJ
SD1
SD2
SD3
SD4
SD5
I801
Q777
POWER/DEF.
P.W.B.
DIGITAL
CONVERGENCE
UNIT
Y1
Y1
I401
PP
SIP MATRIX
P.W.B.
SR
PP
SL
Main Tuner
PIP Tuner
Do not touch
Y1 connector
to PV & VMC
connectors
3D COMB UNIT
ST
SIGNAL
SUB P.W.B.
PINP UNIT
VMC
Do not touch
VMC connector to
Y1 connector
B
Don't stress
the Anode
Leads
T001
MB
MG
MR
CR
Y2
CG
CB
CB
FT
FT
VM P.W.B.
SIGNAL P.W.B.
FOCUS
FS
N005
PURSE LOCK
FBT
B
G
ST
TERMINAL P.W.B.
ANTENNA TERMINAL BOARD
PS
POWER CORD

NOTE: Reference to CAUTIONS WHEN CONNECTING/DISCONNECTING THE HV CONNECTOR when HV Conn. (anode lead) is removed or inserted.

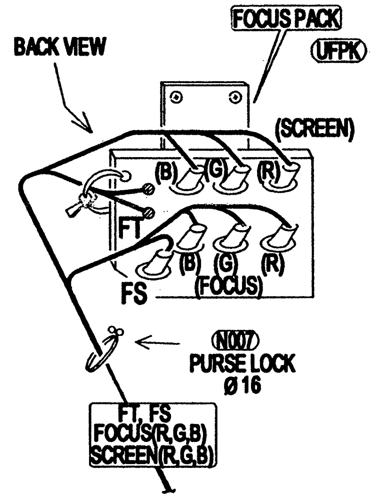
NOTE: Anode lead should be separated from others wires. (min. 10 mm) Anode lead must not be twisted during the operation of wiring dress.

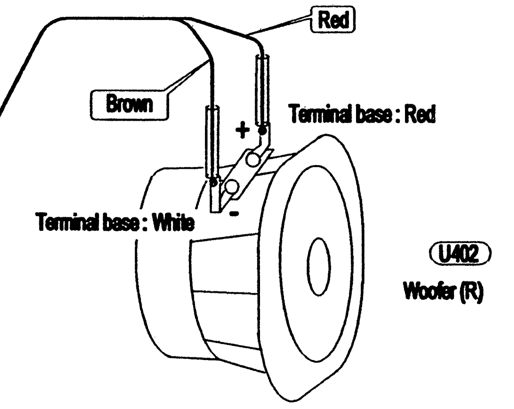
50FX49B WIRING DRAWING


FJ
CONTROL P.W.B.
SPECIFICATION (1)
FOCUS PACK
FJ
from SP MATRIX P.W.B
PR
Double loop
FJ
from SIGNAL P.W.B
A
U401 Woofer (L)
White
Red
POWER / DEF P.W.B
Purse lock Ø16
FOCUS (R)
FOCUS (G)
GR
BG
FOCUS (R,G,B)
SCREEN (R,G,B)
FOCUS(B)
GR
P31
Y2
R2
SCREEN (R)
CPT P.W.B. (R)
GR
BG
CPT P.W.B. (G)
P31
G2
R2
SCREEN(G)
BG
Y1
P31
SCREEN(B)
G2
CPT P.W.B. (B)
R2
G2
FOCUS (R)
SCREEN (R)
FOCUS (G,B)
SCREEN (G,B)
Purse lock Ø11.5
FOCUS (B)
SCREEN (B)
SIGNAL P.W.B.

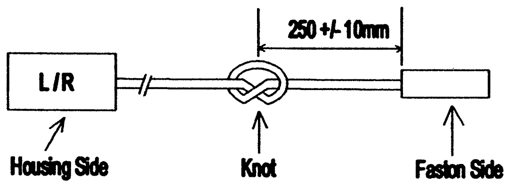
SPECIFICATION

(1) Refer to figure below about assembly of FOCUS PACK leads.

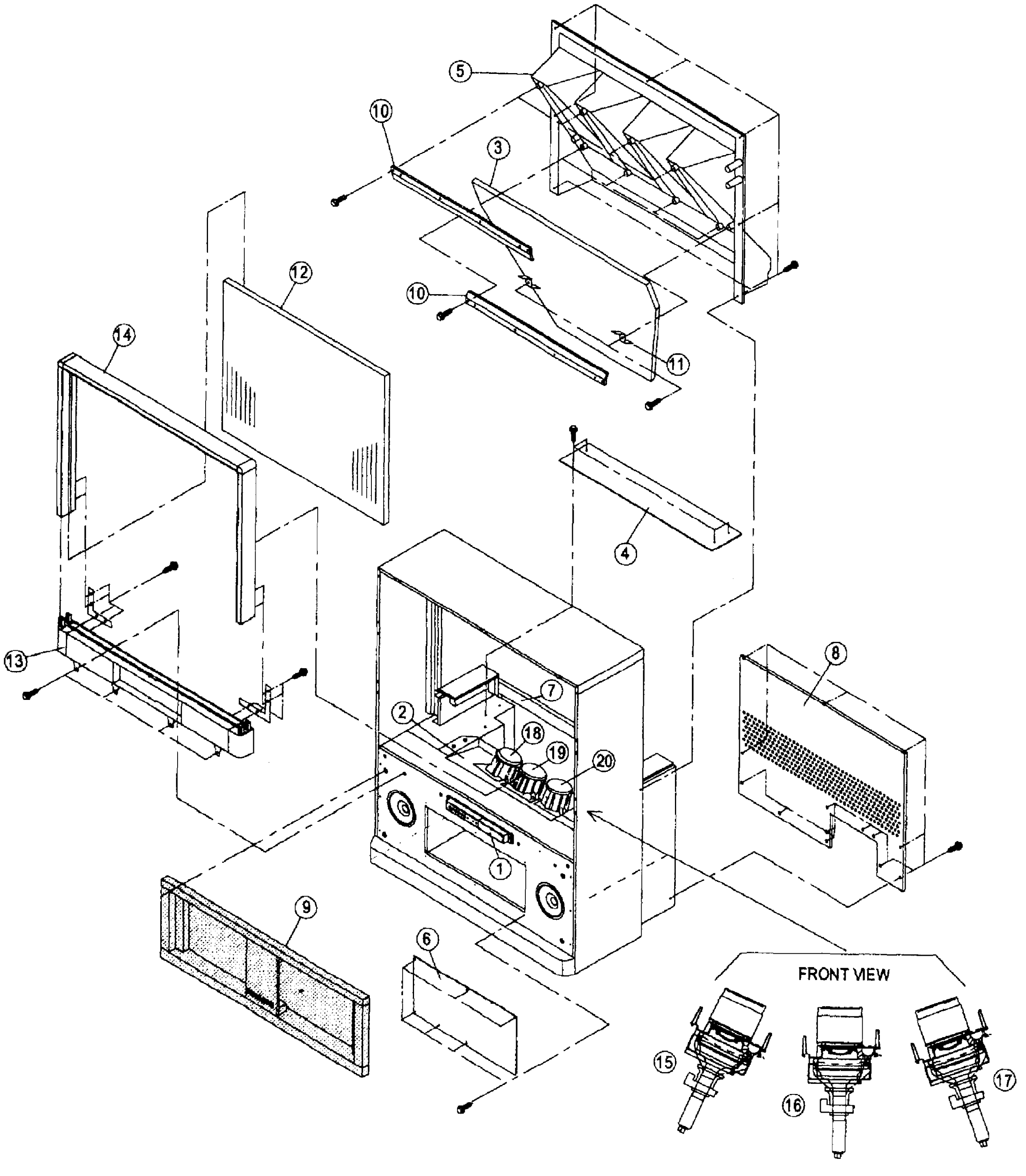

FOCUS PACK
UFPK
BACK VIEW
(SCREEN)
(B)
(G)
(R)
FT
(B)
(G)
(R)
FS
(FOCUS)
N007
PURSE LOCK
Ø16
FT, FS
FOCUS(R,G,B)
SCREEN(R,G,B)


Red
Brown
Terminal base : Red
+
Terminal base : White
-
U402
Woofer (R)

Make a knot as figure below after wires are through hole (A) in cabinet.


250 +/- 10mm
L/R
Housing Side
Knot
Faston Side

EXPLODED VIEW



NOTE: Refer to page 83 for description and parts list. Some parts may appear different than those shown in the Exploded View. When ordering, refer to the Replacement Parts List for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver trough improper servicing.

ABBREVIATIONS

Capacitors:

AL: Aluminum Electrolytic
CD: Ceramic Disc
EL: Electrolitic
PF: Polyester Film
PP: Polypropylene
PL: Plastic
TA: Tantalum

Resistors:

CF: Carbon Film
CC: Carbon Composition
MF: Metal Oxide
VR: Variable Resistor
WW: Wire Wound
FR: Fuse Resistor
MG: Metal Grazed

Semiconductors:

TR: Transistor
DI: Diode
ZD: Zener Diode
VA: Varistor
TH: Termistor
IC: Integrated Circuit

CIRCUIT BLOCK	SECOND CHAR. OF SYMBOL No.	CIRCUIT BLOCK	SECOND CHAR. OF SYMBOL No.	CIRCUIT BLOCK	SECOND CHAR. OF SYMBOL No.
System Control	0	C.P.T.	8	Convergence	K
Tuner	1	Power Suply	9	Control	M
Signal (Y) & Sync.	2	Signal Control (MTS)	A	Hor. & Vert. Det.	N
Audio	4	Signal Control	C	3 Line Comb Filter	X
Signal (Chroma)	5	(include B.P.F.)		Signal Control (Comp.)	Y
Vertical Deflection	6	V.M.	E	SP Matrix	S
Horizontal Deflection	7				

SYMBOL NO.	PART NO.	PART DESCRIPTION
		CAPACITORS
C002	0228758R	CAP 2125 CHIP 150PFJSL50V TAPE
C003	0246464R	CAP.-CERAMIC 100PF-J CH 50V TAPE
C004	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
C005	0893031R	CAP 2125CHIP 1000PFKB 50V TAPE
C015	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C016	0228042R	CAP 2125CHIP 33PFJCH 50V TAPE
C017	0890121R	CAP.-CERAMIC 33PF-J CH 50V
C018	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C019	0800282R	CAP.-ELECTORO. 2.2UF-M(SMG) 50V
C025	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C026	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C029	0228758R	CAP 2125 CHIP 150PFJSL50V TAPE
C030	0284623R	CAP.-ELECTRO. 1UF-SME(BP) 50V
C031	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
C032	0800324R	CAP.-ELECTRO. 100UF-M(SMG) 6.3V
C033	0893053R	CAP2125CHIP 47000PFKB 50V TAPE
C034	0228756R	CAP2125CHIP 120PFJSL 50V TAPE
C035	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C036	0800358R	CAP.-ELECTRO. 1000UF-M 6.3V
C037	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C040	0800353R	CAP.-ELECTRO.470UF-M 16V
C041	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C042	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C043	0800351R	CAP.-ELECTRO. 470UF-M 6.3V
C044	0893053R	CAP2125CHIP 47000PFKB 50V TAPE
C045	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C046	0893048R	CAP2125CHIP 22000PFKB 50V TAPE
C053	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C054	0800326R	CAP.-ELECTRO. 100UF-M 16V
C057	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
C061	0800279R	CAP.-ELE. 1.0UF-M(SMG) 50V
C064	0800326R	CAP.-ELE. 100UF-M 16V
C065	0800291R	CAP.-ELE. 10UF-M(SMG) 16V
C067	0800291R	CAP.-ELE. 10UF-M(SMG) 16V
C068	0800317R	CAP.-ELE. 47UF-M(SMG) 16V
C070	AN00637R	CAP.POLY 0.1UF 50V TAPE
C071	AN00637R	CAP.POLY 0.1UF 50V TAPE
C075	0893031R	CAP 2125CHIP 1000PFKB 50V TAPE
C076	0228756R	CAP2125CHIP 120PFJSL 50V TAPE
C101	0800326R	CAP.-ELE. 100UF-M 16V
C102	0800326R	CAP.-ELE. 100UF-M 16V
C103	0893053R	CAP2125CHIP 47000PFKB 50V TAPE
C104	0800358R	CAP.-ELE. 1000UF-M 6.3V
C105	0800361N	CAP.-ELE 1000UF 16V
C106	0800358R	CAP.-ELE. 1000UF-M 6.3V
C107	0893053R	CAP2125CHIP 47000PFKB 50V TAPE
C108	0800361N	CAP.-ELE. 1000UF 16V
C109	0800361N	CAP.-ELECTRO 1000UF 16V
C110	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C111	0800326R	CAP.-ELECTRO. 100UF-M 16V
C112	AN00624R	CAP.POLY 0.01UF 50V TAPE
C113	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C114	0800359R	CAP.-ELECTRO. 1000UF-M 10V
C115	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C116	0800361N	CAP.-ELECTRO 1000UF 16V
C119	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
C11A	0228770R	CAP. MINI-CHIP 470PF-J SL 50V TAPE
C120	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C121	0228756R	CAP2125CHIP 120PFJSL 50V TAPE	C514	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C122	0893053R	CAP2125CHIP 47000PFKB 50V TAPE	C515	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C123	0800324R	CAP.-ELECTRO. 100UF-M(SMG) 6.3V	C516	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C124	0800324R	CAP.-ELECTRO. 100UF-M(SMG) 6.3V	C517	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C125	0893053R	CAP2125CHIP 47000PFKB 50V TAPE	C518	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
C126	0228746R	CAP 2125 CHIP 47PFJSL 50V TAPE	C519	0800282R	CAP.-ELECTORO. 2.2UF-M(SMG) 50V
C127	0228038R	CAP 2125CHIP 22PFJCH 50V TAPE	C520	0228032R	CAP 2125CHIP 12PFJCH 50V TAPE
C128	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	C521	AN00615R	CAP.POLYESTER 0.0022UF 50V TAPE
C132	0893053R	CAP2125CHIP 47000PFKB 50V TAPE	C522	0800273R	CAP.-ELECTRO 0.22UF-M 50V
C136	0800326R	CAP.-ELECTRO. 100UF-M 16V	C523	0800326R	CAP.-ELECTRO. 100UF-M 16V
C137	0893053R	CAP2125CHIP 47000PFKB 50V TAPE	C524	0800326R	CAP.-ELECTRO. 100UF-M 16V
C138	0228770R	CAP. MINI-CHIP 470PF-J SL 50V TAPE	C525	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C139	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C526	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C140	0800361N	CAP.-ELECTRO 1000UF 16V	C527	0800326R	CAP.-ELECTRO. 100UF-M 16V
C141	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C528	0284638R	CAP.-ELECTRO. 10UF-SME(BP) 16V
C142	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C529	0800282R	CAP.-ELECTORO. 2.2UF-M(SMG) 50V
C1C1	0800288R	CAP.-ELECTRO. 4.7UF-M(SMG) 50V	C530	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C3A2	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C531	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C3A3	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE	C532	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C401	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	C533	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C402	0284623R	CAP.-ELECTRO. 1UF-SME(BP) 50V	C534	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C403	0284623R	CAP.-ELECTRO. 1UF-SME(BP) 50V	C535	0800353R	CAP.-ELECTRO.470UF-M 16V
C404	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	C536	AN00628R	CAP.POLYESTER 0.022UF 50V TAPE
C405	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	C537	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C406	0893031R	CAP 2125CHIP 1000PFKB 50V TAPE	C538	0800282R	CAP.-ELECTORO. 2.2UF-M(SMG) 50V
C407	0893031R	CAP 2125CHIP 1000PFKB 50V TAPE	C539	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C408	0800318R	CAP.-ELECTRO. 47UF-M 25V	C540	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C409	0800318R	CAP.-ELECTRO. 47UF-M 25V	C541	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C410	0800327R	CAP.-ELECTRO. 100UF-M 25V	C542	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C411	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	C543	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C412	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	C544	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V
C413	0800327R	CAP.-ELECTRO. 100UF-M 25V	C545	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C414	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	C546	0800326R	CAP.-ELECTRO. 100UF-M 16V
C415	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C547	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
C416	0284824F	CAP.-ELECTRO. 2200UF 35V SMG	C548	0228754R	CAP2125CHIP 100PFJSL 50V TAPE
C417	0880198R	CAP.-PLOY. 0.22UF-J 50V	C549	0228754R	CAP2125CHIP 100PFJSL 50V TAPE
C418	0880198R	CAP.-PLOY. 0.22UF-J 50V	C550	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C419	0284824F	CAP.-ELECTRO. 2200UF 35V SMG	C551	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C420	0284824F	CAP.-ELECTRO. 2200UF 35V SMG	C552	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C424	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C553	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C426	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C554	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C427	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C555	0800326R	CAP.-ELECTRO. 100UF-M 16V
C428	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C556	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
C451	0880198R	CAP.-PLOY. 0.22UF-J 50V	C557	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C456	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C558	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C457	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C601	AN00626R	CAP.POLYESTER 0.015UF 50V TAPE
C458	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C602	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C459	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	C603	AL01326R	ALUMINIUM ELECT. CAP. PW(4.7UF 50V)
C504	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V	C604	0800326R	CAP.-ELECTRO. 100UF-M 16V
C507	0228048R	CAP. MINI-CHIP 56PF-J CH 50V TAPE	C605	AN00619R	CAP.POLYESTER 0.0047UF 50V TAPE
C508	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	C606	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
C509	0890058R	CAP.-CERAMIC 8PF-50V	C607	0880198R	CAP.-PLOY. 0.22UF-J 50V
C510	0800326R	CAP.-ELECTRO. 100UF-M 16V	C608	0244501R	CAP.-CERAMIC 1000PF-K 500V
C511	0228708R	CAPACITOR MINI-CHIP 8PF-C SL 50V TAPE	C609	0244501R	CAP.-CERAMIC 1000PF-K 500V
C512	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	C610	0800345R	CAP.-ELECTRO. 330UF-M(SMG) 25V
C513	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	C611	AN00631R	CAP.POLYESTER 0.033UF 50V TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C613	AL01157R	AL ELECTROLYTIC CAPACITOR(1UF 50V)	C840	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
C614	0800347N	CAP.-ELECTRO. 330UF-M(SMG) 50V	C864	AJ00559	CAPACITOT CERAMIC 2200PF2KV
C615	AL01143S	AL ELECTROLYTIC CAPACITOR(2200UF 25V)	C865	0800326R	CAP.-ELECTRO. 100UF-M 16V
C616	AL01336R	AL ELECT. CAPACITOR PW(10UF 16V)	C867	0890087R	CAP.-CERAMIC 1000PF-K 50V
C617	AL01297R	AL ELECT. CAPACITOR PW(1UF 50V)	C868	0890083R	CAP.-CERAMIC 470PF-K 50V
C619	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	C870	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
C620	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE	⚠ C901	AN01445S	ACROSS CAPA 0.22UF 250V RE224
C621	0298261R	CAP.-TANTALUM 1MF-J 35V	⚠ C902	AN01443S	ACROSS CAPA 0.1UF 250V RE104
C622	0800347N	CAP.-ELECTRO. 330UF-M(SMG) 50V	C903	AJ00195F	CAPACITOR CERAMIC 4700P 250V F
C632	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE	C904	AJ00195F	CAPACITOR CERAMIC 4700P 250V F
C633	0279693R	CAP.-POLYESTER FLM 0.1UF	C905	0284296	CAP.ELECTRO 680UF-M 250V(KMH)
C641	0244105R	CAP.-CERAMIC 2200PF-K 50V TAPE	C906	0284296	CAP.ELECTRO 680UF-M 250V(KMH)
C701	0251771	CAP.-ELECTRO 220UF-M 160V	C907	0800328R	CAP. ELECTRO. 100UF-M 35V
C702	0299926F	CAP.-POLYESTER FILM 0.1UF-K 200V	C908	0890087R	CAP.-CERAMIC 1000PF-K 50V
C703	0890028M	CAP.-CERAMIC 330PF-K B 50V CYLINDRICAL	C909	0800332N	CAP.-ELECTRO. 100UF-M 100V
C704	0244109R	CAPACITOR-CERAMIC 4700PF-KB 50V	C910	0299977F	CAP.-POLY FILM 0.0047UF-F 630V
C705	0243507R	CAP.-CERAMIC 330PF-K 500V TAPE	C912	0890085R	CAP.-CERAMIC 680PF-K 50V
C706	0244501R	CAP.-CERAMIC 1000PF-K 500V	C913	0800282R	CAP.-ELECTORO. 2.2UF-M(SMG) 50V
C707	AJ00134	CAPACITOR CERAMIC 1000P DC2K-R	C914	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
⚠ C708	AN01128F	METALLIZ POLY FILM CAP.0.0047UF	C915	AL00796S	CAP.EL.S-LEAD 1200UF-M(LXV) 35V
⚠ C709	AN01134F	METALLIZ POLY FILM CAP.0.0075UF	C916	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
C710	0299932F	CAP.-POLYPRO. 0.33UF-K 200V	C917	0244105R	CAP.-CERAMIC 2200PF-K 50V TAPE
C711	0299932F	CAP.-POLYPRO. 0.33UF-K 200V	C918	AL00796S	CAP.EL.S-LEAD 1200UF-M(LXV) 35V
⚠ C712	0299707F	CAP.-POLYESTOR 0.015UF-K 630V	C919	0880198R	CAP.-PLOY. 0.22UF-J 50V
C713	0800277R	CAP.-ELECTORO. 0.47UF-M 50V	C920	0800328R	CAP. ELECTRO. 100UF-M 35V
C714	AN00628R	CAP.POLYESTER 0.022UF 50V TAPE	C921	0800328R	CAP. ELECTRO. 100UF-M 35V
C715	0890089R	CAP.-CERAMIC 1500PF-K 50V	C922	0800326R	CAP.-ELECTRO. 100UF-M 16V
C717	0243503R	CAP.-CERAMIC 150PF-K B 500V	C923	0800328R	CAP. ELECTRO. 100UF-M 35V
C718	AL00042	CAP.ELECTRO 33UF 350V	C924	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V
C719	0880198R	CAP.-PLOY. 0.22UF-J 50V	C925	AL00796S	CAP.EL.S-LEAD 1200UF-M(LXV) 35V
C721	0243511R	CAP.-CERAMIC 680PF-K 500V TAPE	C926	0880198R	CAP.-PLOY. 0.22UF-J 50V
C722	0243511R	CAP.-CERAMIC 680PF-K 500V TAPE	C927	AL00796S	CAP.EL.S-LEAD 1200UF-M(LXV) 35V
C723	AN01137F	METALLIZ POLY FILM CAP.0.01UF	C928	AL00796S	CAP.EL.S-LEAD 1200UF-M(LXV) 35V
C724	0279693R	CAP.-POLYESTER FLM 0.1UF	C929	0251703	CAP.ELECTRO 390UF-M 160V(KMH)
C725	0890087R	CAP.-CERAMIC 1000PF-K 50V	C930	AL00793S	CAP.EL.S-LEAD 1200UF-M(LXV) 16V
C726	0243508R	CAPACITOR-CERAMIC 390PF-K 500V	C931	0800353R	CAP.-ELECTRO.470UF-M 16V
C727	0244501R	CAP.-CERAMIC 1000PF-K 500V	C935	0800355N	CAP.ELECTRO. 470UF-M 35V
C729	0259471	CAP.-ELECTRO 6.8UF-M (BP) 50V	C937	AL00792S	CAP.-EL.S-LEAD 2200UF-M(LXV) 10V
C730	0244109R	CAPACITOR-CERAMIC 4700PF-KB 50V	C939	0800328R	CAP. ELECTRO. 100UF-M 35V
C731	0800329R	CAP.-ELECTRO. 100UF-M(SMG) 50V	C940	0800353R	CAP.-ELECTRO.470UF-M 16V
C740	0284667R	CAP.-ELECTRO. 47UF-MBPR(SME)16V	C941	0880198R	CAP.-PLOY. 0.22UF-J 50V
C750	0284634R	CAP.-ELECTRO 4.7UF-SME(BP) 50V	C942	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V
C771	0890084R	CAP.-CERAMIC 560PF-K 50V	C943	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
C801	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	C945	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C802	0800326R	CAP.-ELECTRO. 100UF-M 16V	C948	AL00952S	AL ELECTROLYTIC CAP.(4700UF6.3V)
C804	AJ00559	CAPACITOT CERAMIC 2200PF2KV	C949	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C805	0800326R	CAP.-ELECTRO. 100UF-M 16V	C952	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C807	0890087R	CAP.-CERAMIC 1000PF-K 50V	C954	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C808	0890084R	CAP.-CERAMIC 560PF-K 50V	C955	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C810	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE	C956	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
C831	AL00037R	AL ELECTROLYTIC CAPACITOR(33UF350V)	C957	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
C834	AJ00559	CAPACITOT CERAMIC 2200PF2KV	⚠ C958	AJ00157R	CAPACITOR CERAMIC 1000P 400V B
C835	0800326R	CAP.-ELECTRO. 100UF-M 16V	⚠ C959	AJ00163R	CAPACITOR CERAMIC 2200P 400V E
C837	0890087R	CAP.-CERAMIC 1000PF-K 50V	C962	0800326R	CAP.-ELECTRO. 100UF-M 16V
C838	0890084R	CAP.-CERAMIC 560PF-K 50V	C963	0800303R	CAP.-ELECTRO. 22UF-M 50V
C839	0890071R	CAP.-CERAMIC 56PF-J 50V	C964	0800361N	CAP.-ELECTRO 1000UF 16V

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C965	0800308R	CAP.-ELECTRO. 33UF-M(SMG) 16V	CF03	AN01111F	METALLIZ POLY FILM CAPACITOR0.001UF
C966	0880198R	CAP.-PLOY. 0.22UF-J 50V	CF04	AN00614R	CAP.POLYESTER 0.0018UF 50V TAPE
C967	0243509R	CAPACITOR-CERAMIC 470PF-K 500V TAPE	CF05	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C968	0243509R	CAPACITOR-CERAMIC 470PF-K 500V TAPE	CF06	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C969	0244109R	CAPACITOR-CERAMIC 4700PF-KB 50V	CF07	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
C971	0243511R	CAP.-CERAMIC 680PF-K 500V TAPE	CF08	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
C974	0243511R	CAP.-CERAMIC 680PF-K 500V TAPE	CF09	0880196R	CAP.-POLYESTER 0.15UF 50V HFT
C975	0243511R	CAP.-CERAMIC 680PF-K 500V TAPE	CF10	0880197R	CAP.POLYESTER 0.18UF 50V
CA01	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF12	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA02	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF13	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CA05	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF14	0259151F	CAP.-ELECTRO. 100UF 160V
CA06	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF15	0880198R	CAP.-PLOY. 0.22UF-J 50V
CA07	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF16	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
CA08	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CF17	0244109R	CAPACITOR-CERAMIC 4700PF-KB 50V
CA26	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CF18	0245158	CAPACITOT CERAMIC 68PF/2KV
CA27	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CF19	0245156	CAPACITOT CERAMIC 22PF/2KV
CA28	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CF20	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA29	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CF21	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CA34	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CK01	0800353R	CAP.-ELECTRO.470UF-M 16V
CA37	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CK02	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V
CA38	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	CK03	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA40	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CK04	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CA41	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CK05	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA68	0284623R	CAP.-ELECTRO. 1UF-SME(BP) 50V	CK06	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CA69	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	CK07	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA73	0284623R	CAP.-ELECTRO. 1UF-SME(BP) 50V	CK08	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CA74	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE	CK09	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CA75	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CK10	0800326R	CAP.-ELECTRO. 100UF-M 16V
CA76	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CK12	0890076R	CAP.CERAMIC 150PF-K 50V
CA82	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CK13	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CA83	0800286R	CAP.-ELECTRO. 4.7UF-M(SMG) 25V	CK14	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CC02	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	CK15	AN00611R	CAP.POLYSTYLENE 0.001UF 50V TAPE
CC03	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	CK16	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CE01	0800354R	CAP.-ELECTRO. 470UF-M 25V	CK17	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE
CE02	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE	CK18	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CE03	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	CK19	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CE04	0890076R	CAP.CERAMIC 150PF-K 50V	CK20	0890076R	CAP.CERAMIC 150PF-K 50V
CE05	0800326R	CAP.-ELECTRO. 100UF-M 16V	CK21	0890076R	CAP.CERAMIC 150PF-K 50V
CE06	0890064R	CAP.-CERAMIC 18PF-J SL 50V	CK22	0890076R	CAP.CERAMIC 150PF-K 50V
CE08	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	CK23	0890076R	CAP.CERAMIC 150PF-K 50V
CE09	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	CK24	0890076R	CAP.CERAMIC 150PF-K 50V
CE10	0800321R	CAP.-ELECTRO. 47UF-M 50V	CK25	0890076R	CAP.CERAMIC 150PF-K 50V
CE11	0890074R	CAP.-CERAMIC 100PF-J 50V	CK27	0800356N	CAP.-ELECTRO. 470UF-M 50V
CE12	0244541F	CAPACITOR-CERAMIC 0.01MF-K B 500V	CK28	0800356N	CAP.-ELECTRO. 470UF-M 50V
CE13	0244541F	CAPACITOR-CERAMIC 0.01MF-K B 500V	CK29	0890076R	CAP.CERAMIC 150PF-K 50V
CE14	AL00009R	ALU.ELEC.CAP. 47UF 160V	CK30	0890076R	CAP.CERAMIC 150PF-K 50V
CE15	0247848R	CAP.-CERAMIC 56PF-J SL 500V	CK31	0890076R	CAP.CERAMIC 150PF-K 50V
CE16	AL00007R	AL ELECTROLYTIC CAP.(220UF160V)	CK32	0890076R	CAP.CERAMIC 150PF-K 50V
CE17	0244509R	CAP.-CERAMIC 4700PF-KB B 500V	CK33	0890076R	CAP.CERAMIC 150PF-K 50V
CE18	0890074R	CAP.-CERAMIC 100PF-J 50V	CK34	0890076R	CAP.CERAMIC 150PF-K 50V
CE19	AL00009R	ALU.ELEC.CAP. 47UF 160V	CK60	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CE20	AL00009R	ALU.ELEC.CAP. 47UF 160V	CM01	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
CE21	0890079R	CAP.-CERAMIC 270PF-K 50V	CM02	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CE23	0890079R	CAP.-CERAMIC 270PF-K 50V	CM03	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V
CF01	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CM04	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE
CF02	AL01296R	AL ELECT. CAPACITOR PW(0.47UF 350V)	CM05	AN00624R	CAP.POLYESTER 0.01UF 50V TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CM06	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	CX47	0800326R	CAP.-ELECTRO. 100UF-M 16V
CM14	AN00637R	CAP.POLYESTER 0.1UF 50V TAPE	CX48	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
CN01	0800279R	CAP.-ELECTORO. 1.0UF-M(SMG) 50V	CX49	0800326R	CAP.-ELECTRO. 100UF-M 16V
CN02	0800288R	CAP.-ELECTRO. 4.7UF-M(SMG) 50V	CX50	0800325R	CAP.-ELECTRO. 100UF-M 10V
CN03	AN00631R	CAP.POLYESTER 0.033UF 50V TAPE	CX52	0800325R	CAP.-ELECTRO. 100UF-M 10V
CN04	0890084R	CAP.-CERAMIC 560PF-K 50V	CX53	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
CN05	0800326R	CAP.-ELECTRO. 100UF-M 16V	CX54	0284647R	CAP.-ELECTRO.22UF-SME(BP) 16V
CN06	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CX55	0228042R	CAP 2125CHIP 33PFJCH 50V TAPE
CS38	0880194R	CAP.-POLYESTER 0.1UF-J 50V	CX56	0228042R	CAP 2125CHIP 33PFJCH 50V TAPE
CS39	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V	CX57	0228048R	CAPACITOR MINI-CHIP 56PF-J CH 50V TAPE
CS60	0284634R	CAP.-ELECTRO 4.7UF-SME(BP) 50V	CX58	0228048R	CAPACITOR MINI-CHIP 56PF-J CH 50V TAPE
CS62	0800288R	CAP.-ELECTRO. 4.7UF-M(SMG) 50V	CY01	0284638R	CAP.-ELECTRO. 10UF-SME(BP) 16V
CS63	0800288R	CAP.-ELECTRO. 4.7UF-M(SMG) 50V	CY04	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
CS64	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY05	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
CS65	0890087R	CAP.-CERAMIC 1000PF-K 50V	CY06	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
CS66	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY07	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V
CS67	0890087R	CAP.-CERAMIC 1000PF-K 50V	CY08	0800326R	CAP.-ELECTRO. 100UF-M 16V
CS68	AN00631R	CAP.POLYESTER 0.033UF 50V TAPE	CY09	0893053R	CAP2125CHIP 47000PFKB 50V TAPE
CS69	AN00621R	CAP.POLYESTER 0.0056UF 50V TAPE	CY10	0284638R	CAP.-ELECTRO. 10UF-SME(BP) 16V
CS70	AN00621R	CAP.POLYESTER 0.0056UF 50V TAPE	CY11	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
CS71	AN00631R	CAP.POLYESTER 0.033UF 50V TAPE	CY12	0800326R	CAP.-ELECTRO. 100UF-M 16V
CS72	0880194R	CAP.-POLYESTER 0.1UF-J 50V	CY13	0893033R	CAP 2125CHIP 1500PFKB 50V TAPE
CS73	0800326R	CAP.-ELECTRO. 100UF-M 16V	CY14	0800353R	CAP.-ELECTRO.470UF-M 16V
CS74	0800326R	CAP.-ELECTRO. 100UF-M 16V	CY17	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V
CS75	0800326R	CAP.-ELECTRO. 100UF-M 16V	CY18	0800326R	CAP.-ELECTRO. 100UF-M 16V
CS76	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY19	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
CS77	0800288R	CAP.-ELECTRO. 4.7UF-M(SMG) 50V	CY20	0893027R	CAP 2125 CHIP 100000PF-K B 25V TAPE
CS78	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY30	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
CS79	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY31	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
CS93	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	CY32	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V
CS94	0284634R	CAP.-ELECTRO 4.7UF-SME(BP) 50V	CY33	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
CX01	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V	CY34	0800326R	CAP.-ELECTRO. 100UF-M 16V
CX02	0228040R	CAP 2125CHIP 27PFJCH 50V TAPE	CY37	0800317R	CAP.-ELECTRO. 47UF-M(SMG) 16V
CX03	0228008R	CAP 2125 CHIP 8PF-C CH 50V TAPE	CY38	0800353R	CAP.-ELECTRO.470UF-M 16V
CX04	0228034R	CAP 2125 CHIP 15PF-J CH 50V TAPE	CY39	0893044R	CAP2125CHIP 10000PFKB 50V TAPE
CX24	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	CY50	0800299R	CAP.-ELECTRO. 22UF-M(SMG) 16V
CX25	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	CY75	0284638R	CAP.-ELECTRO. 10UF-SME(BP) 16V
CX26	0893044R	CAP2125CHIP 10000PFKB 50V TAPE			
CX27	0800286R	CAP.-ELECTRO. 4.7UF-M(SMG) 25V			**DIODES**
CX28	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D005	2344041M	DIODE 1SS254TA/1SS270TA
CX29	0893053R	CAP2125CHIP 47000PFKB 50V TAPE	D013	2344041M	DIODE 1SS254TA/1SS270TA
CX30	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D015	2331827M	ZENER DIODE HZ-9 TAPE (C1)SI 500MW 9.3V
CX31	0228060R	CAP 2125 CHIP 180PF-J CH 50V TAPE	D024	2344041M	DIODE 1SS254TA/1SS270TA
CX32	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D025	2344041M	DIODE 1SS254TA/1SS270TA
CX33	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D026	2348212M	DIO-MTZ-J15BTA
CX34	0800325R	CAP.-ELECTRO. 100UF-M 10V	D027	2348212M	DIO-MTZ-J15BTA
CX35	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D028	2348212M	DIO-MTZ-J15BTA
CX36	0800325R	CAP.-ELECTRO. 100UF-M 10V	D029	2348212M	DIO-MTZ-J15BTA
CX37	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D030	2348212M	DIO-MTZ-J15BTA
CX38	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D031	2344041M	DIODE 1SS254TA/1SS270TA
CX39	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D040	2344041M	DIODE 1SS254TA/1SS270TA
CX40	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D041	2344041M	DIODE 1SS254TA/1SS270TA
CX41	0893044R	CAP2125CHIP 10000PFKB 50V TAPE	D044	2344041M	DIODE 1SS254TA/1SS270TA
CX42	0800334R	CAP.-ELECTRO. 220UF 10V	D045	2348102M	ZENER MTZJ-5.1B TA
CX45	0800291R	CAP.-ELECTRO. 10UF-M(SMG) 16V	D046	2348212M	DIO-MTZ-J15BTA
CX46	0800326R	CAP.-ELECTRO. 100UF-M 16V	D048	2344041M	DIODE 1SS254TA/1SS270TA

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
D053	2344041M	DIODE 1SS254TA/1SS270TA	D710	CH02001M	DIODE 1SR139-400
D055	CH00151M	DIODE DSM1SD2(200V)TAPE	⚠ D711	CH00031M	DIODE AU02V1(280V)
D057	2344041M	DIODE 1SS254TA/1SS270TA	⚠ D712	CH00031M	DIODE AU02V1(280V)
D058	2344041M	DIODE 1SS254TA/1SS270TA	D713	CH00901M	DIODE RGP02-15E 1500V 20A
D059	2344041M	DIODE 1SS254TA/1SS270TA	D714	CH00901M	DIODE RGP02-15E 1500V 20A
D101	2348212M	DIO-MTZ-J15BTA	D715	CH02011M	DIODE 1SR153-400
D106	2344041M	DIODE 1SS254TA/1SS270TA	D716	2348231M	ZENER DIODE MTZ-18A TA
D107	2344041M	DIODE 1SS254TA/1SS270TA	D717	2339612M	ZD HZS-3 TA (BLL) SI 200MA 3V
D111	2344041M	DIODE 1SS254TA/1SS270TA	D718	2344041M	DIODE 1SS254TA/1SS270TA
D112	2344041M	DIODE 1SS254TA/1SS270TA	D719	CH02001M	DIODE 1SR139-400
D113	2348123M	ZENER MTZJ-6.2C TA	D720	2334305M	ZD RD30E (B4 T2/TP/TA) SI 5MA 30.51V
D116	2331815M	ZENER HZ7-B2	D721	2348193M	ZENER DIODE MTZJ-12C TA
D117	2335991M	ZENER HZ-T33 (02 TP)	D722	2348151M	ZENER MTZ-J8.2ATA
D118	2335991M	ZENER HZ-T33 (02 TP)	D723	2344041M	DIODE 1SS254TA/1SS270TA
D301	2334324M	ZD RD36E TAPE (B3) SI 500MW 36V	D724	2348123M	ZENER MTZJ-6.2C TA
D401	2344041M	DIODE 1SS254TA/1SS270TA	D725	2344041M	DIODE 1SS254TA/1SS270TA
D402	2344041M	DIODE 1SS254TA/1SS270TA	D777	2334243M	ZD RD16E (B2 T2/TP/TA) SI 10MA 16.51V
D404	2344041M	DIODE 1SS254TA/1SS270TA	D778	2334305M	ZD RD30E (B4 T2/TP/TA) SI 5MA 30.51V
D405	2344041M	DIODE 1SS254TA/1SS270TA	D802	2344041M	DIODE 1SS254TA/1SS270TA
D406	2344041M	DIODE 1SS254TA/1SS270TA	D803	2344041M	DIODE 1SS254TA/1SS270TA
D407	2344041M	DIODE 1SS254TA/1SS270TA	D804	2344041M	DIODE 1SS254TA/1SS270TA
D502	2344041M	DIODE 1SS254TA/1SS270TA	D805	2344041M	DIODE 1SS254TA/1SS270TA
D503	2344041M	DIODE 1SS254TA/1SS270TA	D832	2344041M	DIODE 1SS254TA/1SS270TA
D504	2344041M	DIODE 1SS254TA/1SS270TA	D833	2344041M	DIODE 1SS254TA/1SS270TA
D505	2348163M	ZENER MTZJ-9.1C TA	D862	2344041M	DIODE 1SS254TA/1SS270TA
D507	2344041M	DIODE 1SS254TA/1SS270TA	D863	2344041M	DIODE 1SS254TA/1SS270TA
D508	2344041M	DIODE 1SS254TA/1SS270TA	⚠ D901	2338313	DIODE RBV-406M (60V) SI 0.1USEC
D509	2348163M	ZENER MTZJ-9.1C TA	D902	CH02001M	DIODE 1SR139-400
D510	2348163M	ZENER MTZJ-9.1C TA	D903	CH02001M	DIODE 1SR139-400
D511	2348163M	ZENER MTZJ-9.1C TA	D904	CH02011M	DIODE 1SR153-400
D513	2344041M	DIODE 1SS254TA/1SS270TA	D905	CH02011M	DIODE 1SR153-400
D515	2348163M	ZENER MTZJ-9.1C TA	D906	2348253M	ZENER MTZ-J22CTA
D516	2348163M	ZENER MTZJ-9.1C TA	D907	2334324M	ZD RD36E TAPE (B3) SI 500MW 36V
D517	2348163M	ZENER MTZJ-9.1C TA	D908	CH02011M	DIODE 1SR153-400
D602	2344041M	DIODE 1SS254TA/1SS270TA	D910	2331844M	ZENER HZ12-B1
D603	CH02011M	DIODE 1SR153-400	D911	2331844M	ZENER HZ12-B1
D604	CH02011M	DIODE 1SR153-400	D912	CH00183R	LIGHT EMITTING DIODE (SLZ-981C-06-T1)
D605	2344041M	DIODE 1SS254TA/1SS270TA	D913	2336615	DIODE RU3YX (LF-A1)
D606	2344041M	DIODE 1SS254TA/1SS270TA	D914	2337952S	DIODE RU4YX(LF015-302)
D607	2334243M	ZD RD16E (B2 T2/TP/TA) SI 10MA 16.51V	D915	2337952S	DIODE RU4YX(LF015-302)
D609	CH02001M	DIODE 1SR139-400	D916	2337952S	DIODE RU4YX(LF015-302)
D610	CH02001M	DIODE 1SR139-400	D917	CH02001M	DIODE 1SR139-400
D611	CH02001M	DIODE 1SR139-400	D918	2348271M	ZENER MTZ-J27ATA
D612	2331154M	ZD HZ-12 (A1-3 B1-3.TA)SI 200MA 14.3V	D919	2348213M	ZENER DIODE MTZJ-15C TA
D613	2344041M	DIODE 1SS254TA/1SS270TA	D920	2344041M	DIODE 1SS254TA/1SS270TA
D614	CH02011M	DIODE 1SR153-400	D921	2348121M	ZENER MTZJ-6.2A TA
D615	2344041M	DIODE 1SS254TA/1SS270TA	D922	2348283M	ZENER DIODE MTZJ-30C TA
D616	2334305M	ZENER RD30E (B4 T2/TP/TA) SI 5MA 30.51V	D923	2344041M	DIODE 1SS254TA/1SS270TA
D701	2344041M	DIODE 1SS254TA/1SS270TA	D924	2348042M	ZENER MTZ-J3.0BTA
⚠ D702	2348511G	DIODE RS3FS LF-U1(014-201)	D925	2348264M	ZENER DIODE MTZJ-24D TA
⚠ D703	CH00891S	DIODE UF5406 (600V)	D926	CH02011M	DIODE 1SR153-400
⚠ D704	CH00891S	DIODE UF5406 (600V)	D928	CH01042M	DIODE RK34 (40V)
D705	2344041M	DIODE 1SS254TA/1SS270TA	D929	CH01061F	DIODE RU4AM(600V)
D706	2344041M	DIODE 1SS254TA/1SS270TA	D931	2348283M	ZENER DIODE MTZJ-30C TA
D708	2344041M	DIODE 1SS254TA/1SS270TA	D932	2344041M	DIODE 1SS254TA/1SS270TA
⚠ D709	2335042M	ZENER HZ-22 (2L TP) SI 200MA 400MW	D933	2348132M	ZENER MTZ-J6.8BTA

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
D936	2348193M	ZENER DIODE MTZJ-12C TA
D937	2344041M	DIODE 1SS254TA/1SS270TA
D938	CH00921M	DIODE SB140 40V 1A
D939	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D940	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D941	2344041M	DIODE 1SS254TA/1SS270TA
D942	2348132M	ZENER MTZ-J6.8BTA
D943	2344041M	DIODE 1SS254TA/1SS270TA
D944	2344041M	DIODE 1SS254TA/1SS270TA
D945	CH02011M	DIODE 1SR153-400
D946	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D947	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D948	2344041M	DIODE 1SS254TA/1SS270TA
D951	2348092M	ZENER MTZ-J4.7BTA
D952	2344041M	DIODE 1SS254TA/1SS270TA
D956	2344041M	DIODE 1SS254TA/1SS270TA
D957	2348213M	ZENER DIODE MTZJ-15C TA
D958	2344041M	DIODE 1SS254TA/1SS270TA
D959	2344041M	DIODE 1SS254TA/1SS270TA
D960	2344041M	DIODE 1SS254TA/1SS270TA
D961	2344041M	DIODE 1SS254TA/1SS270TA
D962	2344041M	DIODE 1SS254TA/1SS270TA
D963	2344041M	DIODE 1SS254TA/1SS270TA
D964	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D966	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D967	CH00182R	LIGHT EMITTING DIODE (SLZ-381C-06-T1)
D969	2348102M	ZENER MTZJ-5.1B TA
D971	2348143M	DIODE MTZ-J7.5CTA
D973	CH02011M	DIODE 1SR153-400
D974	2348111M	ZENER MTZ-J5.6ATA
D975	2344041M	DIODE 1SS254TA/1SS270TA
DA01	2344041M	DIODE 1SS254TA/1SS270TA
DA02	2344041M	DIODE 1SS254TA/1SS270TA
DA03	2348031M	DIO-MTZ-J2.7ATA
DA04	2348031M	DIO-MTZ-J2.7ATA
DA11	2344041M	DIODE 1SS254TA/1SS270TA
DA12	2344041M	DIODE 1SS254TA/1SS270TA
DA15	2344041M	DIODE 1SS254TA/1SS270TA
DA16	2344041M	DIODE 1SS254TA/1SS270TA
DA19	2344041M	DIODE 1SS254TA/1SS270TA
DE03	2344041M	DIODE 1SS254TA/1SS270TA
DE04	CH00151M	DIODE DSM1SD2(200V)TAPE
DE05	CH00151M	DIODE DSM1SD2(200V)TAPE
DE06	CH00151M	DIODE DSM1SD2(200V)TAPE
DE07	CH00151M	DIODE DSM1SD2(200V)TAPE
DF01	2344041M	DIODE 1SS254TA/1SS270TA
DF02	2344041M	DIODE 1SS254TA/1SS270TA
DF03	2344041M	DIODE 1SS254TA/1SS270TA
DF04	2338531M	DIODE EG-01C (V) SI 0.5A
DF05	2344041M	DIODE 1SS254TA/1SS270TA
DF07	2344041M	DIODE 1SS254TA/1SS270TA
DF08	2344041M	DIODE 1SS254TA/1SS270TA
DF09	2344041M	DIODE 1SS254TA/1SS270TA
DK01	2339551M	DIODE ED14(V1) SI 5MA 45V
DK04	CH02011M	DIODE 1SR153-400
DK05	CH02011M	DIODE 1SR153-400
DK06	2344041M	DIODE 1SS254TA/1SS270TA
DK16	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK17	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK18	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK19	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK20	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK21	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK22	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK23	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK24	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK25	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK26	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK27	2334324M	Z DIODE RD36E TAPE (B3) SI 500MW 36V
DK40	2331806M	ZENER DIODE HZ-6 TAPE (B3) SI 500MW
DK41	2331806M	ZENER DIODE HZ-6 TAPE (B3) SI 500MW
DK42	2331806M	ZENER DIODE HZ-6 TAPE (B3) SI 500MW
DK43	2331806M	ZENER DIODE HZ-6 TAPE (B3) SI 500MW
DK44	2331806M	ZENER DIODE HZ-6 TAPE (B3) SI 500MW
DM01	2344041M	DIODE 1SS254TA/1SS270TA
DM02	2344041M	DIODE 1SS254TA/1SS270TA
DM03	CH00231	LED SLH-56VC3F
DM04	2348212M	DIO-MTZ-J15BTA
DM05	2348212M	DIO-MTZ-J15BTA
DM11	2348212M	DIO-MTZ-J15BTA
DN01	2344041M	DIODE 1SS254TA/1SS270TA
DN02	2344041M	DIODE 1SS254TA/1SS270TA
DN03	2344041M	DIODE 1SS254TA/1SS270TA
DN04	2344041M	DIODE 1SS254TA/1SS270TA
DN05	2348071M	ZENER DIODE MTZJ-3.9A TA
DN06	2344041M	DIODE 1SS254TA/1SS270TA
DN07	2344041M	DIODE 1SS254TA/1SS270TA
DN08	CH02001M	DIODE 1SR139-400
DN09	2331849M	ZENER HZ12C3 (TA) SI 500MW
DN10	2344041M	DIODE 1SS254TA/1SS270TA
DN11	2344041M	DIODE 1SS254TA/1SS270TA
DS05	CH00151M	DIODE DSM1SD2(200V)TAPE
DY01	2344041M	DIODE 1SS254TA/1SS270TA
DY05	2348163M	ZENER MTZJ-9.1C TA
DY06	2348163M	ZENER MTZJ-9.1C TA
DY07	2348163M	ZENER MTZJ-9.1C TA
		FUSE
⚠ F901	2722358	FUSE AC05A
		COMPOUND COMPONENTS
⚠ H901	2793312	CP-EXN-471P365L CAPRISTOR
HM01	CZ00523	SBX1981-52P R/C RCVR.
UKDG	CS00351	(HC2131) DCU
U002	HP00094	PINP UNIT KC-010S
U101	HC00311	FE (MAIN) TUNER UNIT V6-A30FT
U102	2429691	PIP TUNER V8-A68FT
U401	2412921	SPEAKER 160DG
U402	2412921	SPEAKER 160DG
⚠ UFPK	AZ00161	CRX FOCUS PACK HDK

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
		INTEGRATED CIRCUITS
I001	0000000	UNDECIDED
I004	CP05272U	E2PROM M24C16-BN6
I006	CK07131R	ANALOG MONO. IC (MC14053BFEL)
I007	2000541	IC M51951BSL
I008	2020342	IC MM1115XS
I102	CP05243U	Z9035612PSCR_B
I103	2000541	IC M51951BSL
I105	2015495R	IC HD74HC32FPEL
I106	CP05571	IC BA17805
I401	2004751	IC TA8200AH AUDIO OUTPUT
I501	CP03552U	IC TA1222BN
I503	CK08951R	MM1389XFBE
I601	2003541	IC LA7838
I602	CP06351U	ANALOG MONOLITHIC IC BA10393
⚠ I901	CZ00451	HYBRID IC (STR-M6811A)
⚠ I902	2000465	IC PS2501-1 (KC/LC)
⚠ I903	2000465	IC PS2501-1 (KC/LC)
⚠ I904	2000465	IC PS2501-1 (KC/LC)
⚠ I905	2381349	HYBRID IC (SE120N:+B CONT.)
I908	CP05573	IC BA17812
I909	1360891	IC-NJM7912FA
⚠ I910	CP03912F	ANALOG MONOLITHIC IC (SI-8402L)
I912	CP03923F	ANALOG MONOLITHIC IC (SI-8090S)
I913	CP03922F	ANALOG MONOLITHIC IC (SI-8050S)
IK01	CP05571	IC BA17805
IK02	CP01631R	ICL-PST9142
IK03	CP05571	IC BA17805
IK04	CZ00431	HYBRID IC (STK392-110)
IK05	CZ00431	HYBRID IC (STK392-110)
IS05	2020001	IC TDA9860
IS12	CP02601	AN5285K
IX01	CP04011U	ANALOG MONOLITHIC IC (TC90A13N)
IY01	2020452	ANALOG MONOLITHIC IC (CXA1545AS)
IY02	2003423	IC UPC7893AHF ICL
		COILS
L002	2123781R	FILTER COIL 101K
L003	2123781R	FILTER COIL 101K
L004	BH00697R	COIL 100UH
L101	BH00697R	COIL 100UH
L102	BH00697R	COIL 100UH
L103	2123781R	FILTER COIL 101K
L104	2123781R	FILTER COIL 101K
L105	2123781R	FILTER COIL 101K
L106	2123781R	FILTER COIL 101K
L107	2123781R	FILTER COIL 101K
L110	2123781R	FILTER COIL 101K
L111	2123781R	FILTER COIL 101K
L114	BH00214R	FILTER COIL 100UH
L401	BH01341M	COIL FERRITE BEADS
L402	BH01341M	COIL FERRITE BEADS
L403	BH01341M	COIL FERRITE BEADS
L503	BH00697R	COIL 100UH
L504	BH00697R	COIL 100UH
L505	BH00697R	COIL 100UH
L506	BH00697R	COIL 100UH
L507	BH00697R	COIL 100UH
L508	2123112M	COIL-AXIAL 47UH-K
L509	BH00697R	COIL 100UH
L601	BZ00845	CHOKE COIL 680UH SL1720
L602	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L701	BH00212R	FILTER COIL 68UH
L702	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L703	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L704	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L705	BZ00846	CHOKE COIL 1000UH SL1720
L706	BH00217R	FILTER COIL 180UH
L708	BH00205R	FILTER COIL 22UH
L709	BZ00317	LINEARITY COIL 140UH-W
L710	BZ00318	LINEARITY COIL 50UH-W
L720	BH00228R	COIL 332K-1T7608A
L803	BH00699R	COIL 150UH
L833	BH00699R	COIL 150UH
L863	BH00699R	COIL 150UH
⚠ L901	BZ01841	LX-LINE FILTER(102)
⚠ L902	BZ01831	LX-LINE FILTER(382)
⚠ L903	BZ01841	LX-LINE FILTER(102)
L905	BH00201R	FILTER COIL 10UH
L906	BH00201R	FILTER COIL 10UH
L907	BH00214R	FILTER COIL 100UH
L909	BV00901	PL-CHOPPER COIL 200UH/2A
L910	BH00212R	FILTER COIL 68UH
L911	BV00901	PL-CHOPPER COIL 200UH/2A
L912	BH00214R	FILTER COIL 100UH
L913	BH00214R	FILTER COIL 100UH
L914	BH00214R	FILTER COIL 100UH
L917	BH00214R	FILTER COIL 100UH
L921	2161152	FILTER COIL
L922	BH00214R	FILTER COIL 100UH
L924	2123469M	FERRITE BEADS CORE 2.3UH
L925	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L926	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L927	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L930	2123469M	FERRITE BEADS CORE 2.3UH
L931	2123469M	FERRITE BEADS CORE 2.3UH
L932	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LA02	BH00697R	COIL 100UH
LE01	2123097M	LAL02 TYPE AXIAL COIL 3.9UH-K
LE02	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LE03	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LE04	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LF01	BH00229R	COIL 472K-1T7608A
LF02	BH00229R	COIL 472K-1T7608A
LK01	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK02	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK03	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK04	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK05	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK06	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK07	2123468M	FERRITE BEADS CORE LEAD 0.8MH
LK08	2123468M	FERRITE BEADS CORE LEAD 0.8MH

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
LK09	2123469M	FERRITE BEADS CORE 2.3UH
LK10	2123469M	FERRITE BEADS CORE 2.3UH
LK11	2123469M	FERRITE BEADS CORE 2.3UH
LK12	2123469M	FERRITE BEADS CORE 2.3UH
LS03	BH00697R	COIL 100UH
LX01	2123105M	LAL02 AXIAL COIL 15UH-K
LX05	BH00697R	COIL 100UH
LX06	BH00697R	COIL 100UH
LX07	BH00697R	COIL 100UH
LX08	BH00697R	COIL 100UH
LX09	BH00697R	COIL 100UH
LX10	BH00697R	COIL 100UH
LX11	2123109M	COIL-AXIAL 33UH-K
LX12	2123107M	LAL02 AXIAL COIL 22UH-K
LX13	2123107M	LAL02 AXIAL COIL 22UH-K
LY01	BH00697R	COIL 100UH
LY04	BH00697R	COIL 100UH
LY05	BH00697R	COIL 100UH
LY06	2123781R	FILTER COIL 101K
LY07	BH00697R	COIL 100UH
		TRANSISTORS
Q001	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q002	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q004	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q005	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q006	CA11271R	TRS 2SA1037AK T146 RS
Q007	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q008	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q009	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q011	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q013	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q014	CA11271R	TRS 2SA1037AK T146 RS
Q015	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q016	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q017	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q018	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q019	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q024	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q026	2312171	TRS. 2SC3852
Q027	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q028	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q030	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q032	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q101	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q102	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q103	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ)
Q106	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q107	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q108	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q109	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q110	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q111	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q112	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q113	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q114	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q115	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q401	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q402	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q403	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q404	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q500	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q501	CA00171R	TRS.CHIP IMT5 25V TAPE
Q502	2328072R	TRS.CHIP FMW2 40V TAPE
Q503	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q504	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q505	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q506	CA11264R	PHOTO TRANSISTOR(DTC114EKA)
Q509	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q510	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q511	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q512	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q513	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q515	CA11271R	TRS 2SA1037AK T146 RS
Q516	CA11271R	TRS 2SA1037AK T146 RS
Q517	CA11271R	TRS 2SA1037AK T146 RS
Q519	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q520	CA11271R	TRS 2SA1037AK T146 RS
Q521	CA11271R	TRS 2SA1037AK T146 RS
Q602	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q603	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q604	2320663M	TRS. 2SC1213A (C)
Q605	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q606	CF00611	TRS. 2SC3969(AB) 400V
Q607	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q609	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q701	2326216	TRS. 2SC3116 (S/T)
Q702	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q703	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q705	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q710	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q711	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q712	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q777	CF01541F	2SC2514 F
Q801	2312372F	TRS-2SC3942
Q802	2320663M	TRS. 2SC1213A (C)
Q803	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW
Q804	2320591M	TRS. 2SC458 (B TZ/C TZ)SI 230MHZ200MW
Q805	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW
Q806	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q831	2312372F	TRS-2SC3942
Q832	2320663M	TRS. 2SC1213A (C)
Q833	2320591M	TRS. 2SC458 (B TZ/C TZSI 230MHZ200MW
Q861	2312372F	TRS-2SC3942
Q862	2320663M	TRS. 2SC1213A (C)
Q863	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW
Q901	2312171	TRS. 2SC3852
Q902	2312171	TRS. 2SC3852
Q903	CF02281R	TRS. 2SA821S
Q905	2320591M	TRS. 2SC458 (B TZ/C TZ)SI 230MHZ200MW
Q906	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
Q907	CF02251R	2SC3415S TP	QN02	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q908	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	QN03	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q909	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	QN04	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
Q912	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	QN05	2320591M	TRS. 2SC458 (B TZ/C TZ)
Q913	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	QN06	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)
⚠ Q914	2323782R	THYRISTOR 03P2M(TA)	QX01	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q916	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	QX02	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q917	2320637M	TRS. 2SA673 SI 80MHZ 400MW	QX05	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
Q918	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	QX06	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA01	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QX07	CA11271R	TRS 2SA1037AK T146 RS
QA02	CA11271R	TRS 2SA1037AK T146 RS	QX08	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA03	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QX09	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA04	CA11271R	TRS 2SA1037AK T146 RS	QX10	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA05	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QX11	CA11271R	TRS 2SA1037AK T146 RS
QA06	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QX12	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA74	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QY01	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA75	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QY02	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QA80	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)	QY03	CA11271R	TRS 2SA1037AK T146 RS
QE01	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY04	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QE02	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY05	CA11264R	PHOTO TRANSISTOR(DTC114EKA)
QE03	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY06	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QE04	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY07	2326021M	TRS. 2SC1741S
QE05	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY08	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QE06	2320647M	TRS. 2SC1213 SI 80MHZ400MW	QY10	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QE07	2321351M	TRS. 2SA836/844D/E 100MA	QY11	CA11271R	TRS 2SA1037AK T146 RS
QE08	CF00531	TRS. 2SA1964 160V	QY12	2320647M	TRS. 2SC1213(C21 TZ/D21 TZ)SI 80MHZ400MW
QE09	CF00541	TRS. 2SC5248 160V	QY13	2320647M	TRS. 2SC1213(C21 TZ/D21 TZ)SI 80MHZ400MW
QE10	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY51	CA11271R	TRS 2SA1037AK T146 RS
QE11	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	QY57	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QE12	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	QY58	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QF01	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	QY59	CA11271R	TRS 2SA1037AK T146 RS
QF03	2320663M	TRS. 2SC1213A (C)	QY60	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QF04	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	QY61	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QF05	2320663M	TRS. 2SC1213A (C)	QY62	CA11271R	TRS 2SA1037AK T146 RS
QF06	CF00821F	TRS. 2SC4686A 1200V	QY63	2325691R	TRANSISTOR CHIP(2SC2412KQ/R)
QF07	CF00821F	TRS. 2SC4686A 1200V			
QF08	CF00821F	TRS. 2SC4686A 1200V			**RESISTORS**
QF09	2320591M	TRS. 2SC458 (B TZ/C TZ)			
QF10	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	R001	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
QF11	2320663M	TRS. 2SC1213A (C)	R002	0195947R	RES.2125 CHIP 1/10W 82KJ TAPE
QF12	2320591M	TRS. 2SC458 (B TZ/C TZ)	R003	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
QF13	2320591M	TRS. 2SC458 (B TZ/C TZ)	R005	0700063M	RES.-CARBON FLM 1/16W 47K-JB
QF14	2320591M	TRS. 2SC458 (B TZ/C TZ)	R007	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
QF15	2320591M	TRS. 2SC458 (B TZ/C TZ)	R008	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
QF16	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	R009	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
QF17	CF10852R	TRS. DTC144ESA-T	R010	0195916R	RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE
QK01	2312171	TRS. 2SC3852	R011	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
QK02	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	R012	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
QK03	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ)	R013	0700054M	RES.-CARBON FLM 1/16W 10K-JB
QK04	2320591M	TRS. 2SC458 (B TZ/C TZ)	R014	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
QK06	2320591M	TRS. 2SC458 (B TZ/C TZ)	R015	0195927R	RES 2125 CHIP 1/16W 12KJ TAPE
QK07	2320591M	TRS. 2SC458 (B TZ/C TZ)	R016	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
QK08	2320591M	TRS. 2SC458 (B TZ/C TZ)	R021	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
QM01	2320591M	TRS. 2SC458 (B TZ/C TZ)	R022	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
QM02	2312992	PHOTO TRS. RPT-38PT3F (M)	R023	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
QN01	2320591M	TRS. 2SC458 (B TZ/C TZ)	R025	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R026	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R0C5	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R029	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0C6	0700027M	RES.-CARBON FLM 1/16W 100-JB
R034	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R0C7	0195929R	RES 2125 CHIP 1/16W 15KJ TAPE
R035	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0E2	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R036	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0E3	0188127M	RES.-CARBON FLM 560-JB 1/2W
R037	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0E4	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
R038	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0E5	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R040	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0E6	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
R042	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE	R0E7	0700055M	RES.-CARBON FLM 1/16W 12K-JB
R043	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0E8	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R044	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0F7	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R045	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0F8	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R046	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0F9	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R047	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0G1	0100123M	RES.-CARBON FLM 1/8W 270K-JB
R048	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0G5	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R049	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0G6	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R050	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0G7	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R051	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0G8	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R055	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0G9	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R056	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0H1	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R059	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0H2	0195916R	RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE
R060	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R0H3	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
R061	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R0H4	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R062	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R0H5	0195916R	RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE
R063	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R0H6	0195881R	RES 2125 CHIP 1/16W 180J TAPE
R064	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R0H7	0195947R	RES.2125 CHIP 1/10W 82KJ TAPE
R066	0700027M	RES.-CARBON FLM 1/16W 100-JB	R0H8	0700064M	RES.-CARBON FLM 1/16W 56K-JB
R067	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB	R0L5	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R068	0700027M	RES.-CARBON FLM 1/16W 100-JB	R0L6	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R069	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0L8	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R070	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE	R0M2	0195916R	RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE
R071	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0M3	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R072	0700058M	RES.-CARBON FLM 1/16W 22K-JB	R0M4	AW00074	TRIMMER RESISTOR
R073	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0M5	0700032M	RES.-CARBON FLM 1/16W 220-JB
R074	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE	R0M6	AW00074	TRIMMER RESISTOR
R075	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE	R0M7	0700032M	RES.-CARBON FLM 1/16W 220-JB
R076	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0M8	AW00074	TRIMMER RESISTOR
R078	0700027M	RES.-CARBON FLM 1/16W 100-JB	R0M9	0700032M	RES.-CARBON FLM 1/16W 220-JB
R081	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE	R0N2	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R082	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R0N4	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R083	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0P3	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R086	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0P5	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
R087	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0P6	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R088	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0P8	0700058M	RES.-CARBON FLM 1/16W 22K-JB
R089	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0P9	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R090	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0R1	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R099	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0R3	0700027M	RES.-CARBON FLM 1/16W 100-JB
R0A2	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0R4	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R0A5	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0R5	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R0A6	0195893R	RES 2125 CHIP 1/16W 560J TAPE	R0R6	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R0A7	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R0R7	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
R0A8	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0R8	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R0A9	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R0S1	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R0C1	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0S2	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R0C3	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R0T1	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R0C4	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R0T2	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R0T4	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R160	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R0T5	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE	R163	0700027M	RES.-CARBON FLM 1/16W 100-JB
R0T6	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R167	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R0T7	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R168	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R0T8	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R169	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R0T9	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R173	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R0U1	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R174	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R0U3	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R175	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R0U4	0700027M	RES.-CARBON FLM 1/16W 100-JB	R176	0100041M	RES.-CARBON FLM 1/8W 100-JB
R0U5	0700027M	RES.-CARBON FLM 1/16W 100-JB	R177	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R101	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R178	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R102	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R179	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R103	0195895R	RES.2125 CHIP 1/10W 680J TAPE	R180	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R104	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R181	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R105	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R182	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R106	0195895R	RES.2125 CHIP 1/10W 680J TAPE	R183	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R107	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R184	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R109	0700063M	RES.-CARBON FLM 1/16W 47K-JB	R185	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R110	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R186	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R111	0700027M	RES.-CARBON FLM 1/16W 100-JB	R187	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R112	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R196	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
R113	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE	R197	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
R114	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R198	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
R115	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R1A2	0700023M	RES.-CARBON FLM 1/16W 47-J
R116	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R1A3	0700027M	RES.-CARBON FLM 1/16W 100-JB
R118	0100059M	RES.-CARBON FLM 1/8W 560-JB	R1A9	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
R119	0100059M	RES.-CARBON FLM 1/8W 560-JB	R1B2	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R121	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R1C1	0195893R	RES 2125 CHIP 1/16W 560J TAPE
R122	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R312	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R123	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R3A4	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R124	0700027M	RES.-CARBON FLM 1/16W 100-JB	R3A5	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R125	0700027M	RES.-CARBON FLM 1/16W 100-JB	R3A6	0700032M	RES.-CARBON FLM 1/16W 220-JB
R127	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R3A7	0700032M	RES.-CARBON FLM 1/16W 220-JB
R128	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R3A8	0700032M	RES.-CARBON FLM 1/16W 220-JB
R129	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R3C3	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB
R132	0700063M	RES.-CARBON FLM 1/16W 47K-JB	R3C4	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R133	0700063M	RES.-CARBON FLM 1/16W 47K-JB	R3E1	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R134	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R3E2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R135	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R3E3	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R141	0195893R	RES 2125 CHIP 1/16W 560J TAPE	R3E4	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R142	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R3E5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R144	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R3E6	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R146	0700027M	RES.-CARBON FLM 1/16W 100-JB	R3E7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R147	0700027M	RES.-CARBON FLM 1/16W 100-JB	R3E8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R148	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R3F1	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R149	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R3F3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R150	0195893R	RES 2125 CHIP 1/16W 560J TAPE	R3F4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R151	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R3F5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R152	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R3F6	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R153	0195891R	RES 2125 CHIP 1/16W 470J TAPE	R3F7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R154	0700036M	RES.-CARBON FLM 1/16W 470-JB	R3F8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R155	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R3F9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R156	0700065M	RES.-CARBON FLM 1/16W 68K-JB	R3G1	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R157	AT03694M	RES.MTL GRAZD FLM 1W 10M	R3G2	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R158	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R3G3	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R159	0700027M	RES.-CARBON FLM 1/16W 100-JB	R3G4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R3G6	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3G7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3G8	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3G9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3H1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3H2	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3H4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3H7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3H8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3H9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3J4	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3J5	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3J6	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3J7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3J8	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3J9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3K1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3K2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3K3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3K4	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3K5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3K6	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3K8	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3K9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3L1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3L2	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3L6	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3L7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3L8	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3L9	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3M1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3M2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R3M3	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3M7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3M8	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3M9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3P1	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R3P4	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB
R402	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R404	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R405	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
R406	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
R407	0700037M	RES.-CARBON FLM 1/16W 560-JB
R408	0700037M	RES.-CARBON FLM 1/16W 560-JB
R411	0700063M	RES.-CARBON FLM 1/16W 47K-JB
R412	0700063M	RES.-CARBON FLM 1/16W 47K-JB
R413	0700067M	RES.-CARBON FLM 1/16W 100K-JB
R414	0700036M	RES.-CARBON FLM 1/16W 470-JB
R415	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R416	0700058M	RES.-CARBON FLM 1/16W 22K-JB
R417	AT01549S	METAL FILM RESISTOR(2.2OHM 1W)
R418	AT01549S	METAL FILM RESISTOR(2.2OHM 1W)
R419	0700065M	RES.-CARBON FLM 1/16W 68K-JB
R420	0700065M	RES.-CARBON FLM 1/16W 68K-JB
R421	0188131M	RES.-CARBON FLM 1/4W 1K-JB
R422	0188131M	RES.-CARBON FLM 1/4W 1K-JB
R503	0195920R	RES 2125 CHIP 1/16W 6.8KJ TAPE
R504	0700032M	RES.-CARBON FLM 1/16W 220-JB
R505	0700032M	RES.-CARBON FLM 1/16W 220-JB
R506	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R508	0195879R	RES 2125 CHIP 1/16W 150J TAPE
R509	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R510	0195906R	RES MINI-CHIP RMC1/16 1.8K-J TAPE
R511	0195914R	RES 2125 CHIP 1/16W 3.9KJ TAPE
R516	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R517	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R518	0195904R	RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE
R519	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R520	0195904R	RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE
R521	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
R522	0195910R	RES.2125 CHIP 1/16W 2.7KJ TAPE
R523	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R524	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R525	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R526	0195908R	RES.2125 CHIP 1/10W 2.2KJ TAPE
R527	0195891R	RES 2125 CHIP 1/16W 470J TAPE
R528	0195891R	RES 2125 CHIP 1/16W 470J TAPE
R529	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R530	0195879R	RES 2125 CHIP 1/16W 150J TAPE
R531	0195927R	RES 2125 CHIP 1/16W 12KJ TAPE
R532	0195889R	RES.2125 CHIP 1/10W 390J TAPE
R533	0195889R	RES.2125 CHIP 1/10W 390J TAPE
R534	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R535	0195929R	RES 2125 CHIP 1/16W 15KJ TAPE
R536	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R537	0195927R	RES 2125 CHIP 1/16W 12KJ TAPE
R538	0195870R	RESISTOR MINI-CHIP RMC1/10 68-J TAPE
R539	0195870R	RESISTOR MINI-CHIP RMC1/10 68-J TAPE
R540	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R541	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R542	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R545	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R547	0195908R	RES.2125 CHIP 1/10W 2.2KJ TAPE
R548	0195912R	RES 2125 CHIP 1/16W 3.3KJ TAPE
R549	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
R550	0195922R	RES 2125 CHIP 1/16W 8.2KJ TAPE
R551	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R552	0195931R	RES 2125 CHIP 1/16W 18KJ TAPE
R553	0195879R	RES 2125 CHIP 1/16W 150J TAPE
R555	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R556	0195910R	RES.2125 CHIP 1/16W 2.7KJ TAPE
R557	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R558	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R559	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R561	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R562	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R563	0195889R	RES.2125 CHIP 1/10W 390J TAPE
R564	0195885R	RESISTOR 2125 CHIP 1/16W 270J TAPE
R566	0188118M	RES.-CARBON FLM 1/2W 120-JB
R567	0195908R	RES.2125 CHIP 1/10W 2.2KJ TAPE
R568	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R569	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R570	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R5E8	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R571	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R5E9	0700027M	RES.-CARBON FLM 1/16W 100-JB
R572	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE	R5F1	0195895R	RES.2125 CHIP 1/10W 680J TAPE
R573	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE	R5F2	0195891R	RES 2125 CHIP 1/16W 470J TAPE
R574	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R5F3	0195904R	RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE
R575	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R5F4	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R576	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5F6	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R577	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5F7	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R578	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5F8	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R579	0188125M	RES.-CARBON FLM 390-J 1/2W	R5F9	0195875R	RES 2125 CHIP 1/16W 100J TAPE
R580	0188125M	RES.-CARBON FLM 390-J 1/2W	R5G1	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R581	0188125M	RES.-CARBON FLM 390-J 1/2W	R5G4	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R582	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5G5	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R583	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5G7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R584	0195883R	RES 2125 CHIP 1/16W 220J TAPE	R5G9	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R586	0700044M	RES.-CARBON FLM 1/16W 1.8K-JB	R5H1	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R588	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R5H2	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R590	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R5H3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R591	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R5H4	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R592	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R5H5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R593	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R5H7	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R595	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R5J4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R597	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R5K2	0700052M	RES.-CARBON FLM 1/16W 6.8K-JB
R598	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R602	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
R5A0	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R603	AW00126	TRIMMER RESISTOR
R5A1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R604	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
R5A2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R605	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5A3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R606	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R5A4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R607	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R5A5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R608	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
R5A6	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R609	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
R5A8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R610	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB
R5A9	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R611	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5C0	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R612	0700063M	RES.-CARBON FLM 1/16W 47K-JB
R5C3	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R613	0700055M	RES.-CARBON FLM 1/16W 12K-JB
R5C4	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	R614	0700055M	RES.-CARBON FLM 1/16W 12K-JB
R5C5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R615	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5C6	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R616	0700063M	RES.-CARBON FLM 1/16W 47K-JB
R5C7	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R617	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB
R5C8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R618	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
R5C9	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R619	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
R5D0	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R620	0700055M	RES.-CARBON FLM 1/16W 12K-JB
R5D1	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R621	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5D2	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R622	0113725M	RESISTOR CARBON FILM SRD1/2P-B 100-J
R5D3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R623	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5D4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	R624	0700064M	RES.-CARBON FLM 1/16W 56K-JB
R5D5	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R625	0700044M	RES.-CARBON FLM 1/16W 1.8K-JB
R5D6	0195250R	RES 2125 CHIP 1/16W 000 TAPE	R626	0700058M	RES.-CARBON FLM 1/16W 22K-JB
R5D7	0700027M	RES.-CARBON FLM 1/16W 100-JB	R627	0100063M	RES.-CARBON FLM 1/8W 820-JB
R5D8	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	R628	0100065M	RES.-CARBON FLM 1/8W 1K-JB
R5E2	0700027M	RES.-CARBON FLM 1/16W 100-JB	R629	0700064M	RES.-CARBON FLM 1/16W 56K-JB
R5E3	0700027M	RES.-CARBON FLM 1/16W 100-JB	R630	AW00128	TRIMMER RESISTOR
R5E4	0700027M	RES.-CARBON FLM 1/16W 100-JB	R635	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R5E5	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R636	0700061M	RES.-CARBON FLM 1/16W 33K-JB
R5E6	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R637	0700065M	RES.-CARBON FLM 1/16W 68K-JB
R5E7	0195875R	RES 2125 CHIP 1/16W 100J TAPE	R638	0700038M	RES.-CARBON FLM 1/16W 680-JB

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R639	0700064M	RES.-CARBON FLM 1/16W 56K-JB	R753	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
R640	0100045M	RES.-CARBON FLM 1/8W 150-JB	R760	AT03417S	METAL OX. 390OHM 2W
R641	0119722M	RES.-METAL OXIDE FILM 1.0-JB/W	R761	0114177M	RESISTOR-CARBON FILM SRD 1/4 P 4.7K-J
R642	0119722M	RES.-METAL OXIDE FILM 1.0-JB/W	R770	0700054M	RES.-CARBON FLM 1/16W 10K-JB
R643	0700067M	RES.-CARBON FLM 1/16W 100K-JB	R771	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
R644	0700067M	RES.-CARBON FLM 1/16W 100K-JB	R772	0700055M	RES.-CARBON FLM 1/16W 12K-JB
R645	0119731M	RES.-MTL 0X1DE 1W R68-K TAPE	R773	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
R646	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R801	0140326S	RES. WIRE WOUND 5.6K-J 5W
R647	0700059M	RES.-CARBON FLM 1/16W 27K-JB	R803	0113744M	RESISTOR CARBON FILM SRD1/2P-B 560-J
R648	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	R806	0113815M	RESISTOR CARBON FILM SRD1/2P-B 470K-J
R649	0100053M	RES.-CARBON FLM 1/8W 330-JB	R810	0100051M	RES.-CARBON FLM 1/8W 270-JB
R651	0114135M	RES.-CARBON FLM 1/4W 150-JB	R811	0100057M	RES.-CARBON FLM 1/8W 470-JB
R652	0700014M	RES.-CARBON FLM 1/16W 10-J	R812	0100045M	RES.-CARBON FLM 1/8W 150-JB
R660	0113725M	RES CARBON FILM SRD1/2P-B 100-J	R815	0100063M	RES.-CARBON FLM 1/8W 820-JB
R661	0113725M	RES CARBON FILM SRD1/2P-B 100-J	R817	0100041M	RES.-CARBON FLM 1/8W 100-JB
R671	0113725M	RES CARBON FILM SRD1/2P-B 100-J	R818	0100049M	RES.-CARBON FLM 1/8W 220-JB
R672	0113766M	RES CARBON FILM SRD1/2P-B 4.7K-J	R821	0100063M	RES.-CARBON FLM 1/8W 820-JB
R673	AT03242S	METAL OX. 100OHM 1W	R822	0100049M	RES.-CARBON FLM 1/8W 220-JB
R675	0700061M	RES.-CARBON FLM 1/16W 33K-JB	R823	0100065M	RES.-CARBON FLM 1/8W 1K-JB
R701	AT03599S	METAL OX. 2.7KOHM 3W	R825	0100021M	RES.-CARBON FLM 1/8W 15-JB
R702	AT03595S	METAL OX. 1.8KOHM 3W	R827	0100065M	RES.-CARBON FLM 1/8W 1K-JB
R704	0100031M	RES.-CARBON FLM 1/8W 39-JB	R831	0140326S	RES. WIRE WOUND 5.6K-J 5W
R705	0700034M	RES.-CARBON FLM 1/16W 330-JB	R833	0113744M	RESISTOR CARBON FILM SRD1/2P-B 560-J
R706	0700032M	RES.-CARBON FLM 1/16W 220-JB	R836	0113815M	RESISTOR CARBON FILM SRD1/2P-B 470K-J
R707	0113770M	RES CARBON FILM SRD1/2P-B 6.8K-J	R840	0100051M	RES.-CARBON FLM 1/8W 270-JB
R708	0700058M	RES.-CARBON FLM 1/16W 22K-JB	R841	0100057M	RES.-CARBON FLM 1/8W 470-JB
R709	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB	R842	0100033M	RES.-CARBON FLM 1/8W 47-JB
R710	0187068M	RES.-CARBON FLM 1/16W 1.3K-JB	R843	0150001	RESISTOR-VARIABLE CARBON RV08 200-B
R711	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB	R855	0100021M	RES.-CARBON FLM 1/8W 15-JB
R712	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB	R861	0140326S	RES. WIRE WOUND 5.6K-J 5W
R713	0113727M	RES CARBON FILM SRD1/2P-B 120-J	R863	0113744M	RESISTOR CARBON FILM SRD1/2P-B 560-J
R714	AT03219S	METAL OX. 15.0OHM 1W	R866	0113815M	RESISTOR CARBON FILM SRD1/2P-B 470K-J
⚠ R715	0700062M	RES.-CARBON FLM 1/16W 39K-JB	R870	0100051M	RES.-CARBON FLM 1/8W 270-JB
⚠ R716	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	R871	0100057M	RES.-CARBON FLM 1/8W 470-JB
R717	0113709M	RES CARBON FILM SRD1/2P-B 22-J	R872	0100033M	RES.-CARBON FLM 1/8W 47-JB
R718	0113785M	RES CARBON FILM SRD1/2P-B 27K-J	R873	0150001	RESISTOR-VARIABLE CARBON RV08 200-B
R719	0113791M	RES.-CARBON FLM 1/2W 47K-JB	R885	0100021M	RES.-CARBON FLM 1/8W 15-JB
R720	AT03411S	METAL OX. 220OHM 2W	R901	AT03665M	RES.MTL GRAZD FLM 1/2W 1M
R721	0188122M	RES.-CARBON FLM 220-J 1/2W	R902	0147060	RES.-WIRE WOUND 2W 33-K
R722	0700067M	RES.-CARBON FLM 1/16W 100K-JB	R903	0114281M	RESISTOR-CARBON FILM SRD 1/4P 100K-J
R723	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	⚠ R904	0147802	RES.-WIRE WOUND 15W 0.62-KM
R725	AT03611S	METAL OX. 6.8KOHM 3W	R905	0113772M	RES.-CARBON FLM SRD1/2P-B
R726	0114183M	RES-CARBON FILM SRD 1/4 P 8.2K-J	R906	0113772M	RES.-CARBON FLM SRD1/2P-B
R727	0100091M	RES.-CARBON FLM 1/8W 12K-JB	R907	0100023M	RES.-CARBON FLM 1/8W 18-JB
R728	0100081M	RES.-CARBON FLM 1/8W 4.7K-JB	R908	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB
R729	0114149M	RES-CARBON FILM SRD 1/4 PF 560-J	R909	0700038M	RES.-CARBON FLM 1/16W 680-JB
R730	0700054M	RES.-CARBON FLM 1/16W 10K-JB	R910	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB
R731	0100127M	RES.-CARBON FLM 1/8W 390K-JB	R911	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
R732	AT03251S	METAL OX. 220OHM 1W	R912	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
R733	AT03251S	METAL OX. 220OHM 1W	R913	0700023M	RES.-CARBON FLM 1/16W 47-J
R734	0100127M	RES.-CARBON FLM 1/8W 390K-JB	R914	0700054M	RES.-CARBON FLM 1/16W 10K-JB
⚠ R737	0114041M	RESISTOR-CARBON FILM SRD 1/4P 10J	R915	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
R740	0100121M	RES.-CARBON FLM 1/8W 220K-JB	R916	0700038M	RES.-CARBON FLM 1/16W 680-JB
R750	0700052M	RES.-CARBON FLM 1/16W 6.8K-JB	R917	AT01531S	METAL FILM RESISTOR(0.1OHM1/2W)
R751	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB	R918	0100091M	RES.-CARBON FLM 1/8W 12K-JB
R752	0700067M	RES.-CARBON FLM 1/16W 100K-JB	R919	0100089M	RES.-CARBON FLM 1/8W 10K-JB

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R920	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA02	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R921	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA05	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R922	0700058M	RES.-CARBON FLM 1/16W 22K-JB	RA06	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R923	0700057M	RES.-CARBON FLM 1/16W 18K-JB	RA07	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R925	0113746M	RES.-CARBON FLM 1/2W 680-JB	RA08	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE
R926	0700057M	RES.-CARBON FLM 1/16W 18K-JB	RA09	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R929	0700028M	RES.-CARBON FLM 1/16W 120-JB	RA10	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
R930	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RA11	0700027M	RES.-CARBON FLM 1/16W 100-JB
R931	0119695M	RES.-MTL OXIDE FLM 1W 0.47-F	RA12	0700027M	RES.-CARBON FLM 1/16W 100-JB
R932	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA13	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R933	0700058M	RES.-CARBON FLM 1/16W 22K-JB	RA14	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R934	0113797M	RES.-CARBON FLM 1/2W 82K-JB	RA15	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R935	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	RA16	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R937	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA17	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R940	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA18	0195939R	RMC73S-2A393JR
R941	0700018M	RES.-CARBON FLM 1/16W 22-J	RA19	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
R942	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB	RA20	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R943	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB	RA21	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R944	0113793M	RES CARBON FILM SRD1/2P-B 56K-J	RA22	0195887R	RES 2125 CHIP 1/16W 330J TAPE
R945	0113793M	RES CARBON FILM SRD1/2P-B 56K-J	RA23	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R946	0114205M	RES-CARBON FILM SRD 1/4 P 15K-J	RA24	0195939R	RMC73S-2A393JR
R948	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RA25	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
⚠ R949	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB	RA26	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
⚠ R950	0700039M	RES.-CARBON FLM 1/16W 820-JB	RA27	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R952	0700032M	RES.-CARBON FLM 1/16W 220-JB	RA28	0195887R	RES 2125 CHIP 1/16W 330J TAPE
R954	0700058M	RES.-CARBON FLM 1/16W 22K-JB	RA29	0195883R	RES 2125 CHIP 1/16W 220J TAPE
R955	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RA30	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R957	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA31	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R958	0700057M	RES.-CARBON FLM 1/16W 18K-JB	RA32	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R959	0113750M	RES.-CARBON FLM 1/2W 1K-JB	RA33	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R960	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA34	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R962	0700067M	RES.-CARBON FLM 1/16W 100K-JB	RA35	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R963	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB	RA36	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R968	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RA37	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R969	0700067M	RES.-CARBON FLM 1/16W 100K-JB	RA40	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R970	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB	RA41	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R971	0700037M	RES.-CARBON FLM 1/16W 560-JB	RA42	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R972	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	RA43	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R974	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA50	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R975	AT03419S	METAL OX. 470 OHM 2W	RA51	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R976	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RA52	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R977	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RA53	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R979	0113762M	RES CARBON FILM SRD1/2P-B 3.3K-J	RA58	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R980	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA59	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R981	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA60	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
R982	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB	RA61	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
R983	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RA64	0195960R	RESISTOR MINI-CHIP RMC1/16 270K-J TAPE
R985	0700058M	RES.-CARBON FLM 1/16W 22K-JB	RA65	0195960R	RESISTOR MINI-CHIP RMC1/16 270K-J TAPE
R986	AT01531S	METAL FILM RESISTOR(0.1OHM1/2W)	RA66	0195960R	RESISTOR MINI-CHIP RMC1/16 270K-J TAPE
R987	AT01531S	METAL FILM RESISTOR(0.1OHM1/2W)	RA67	0195960R	RESISTOR MINI-CHIP RMC1/16 270K-J TAPE
R988	0113744M	RES CARBON FILM SRD1/2P-B 560-J	RA68	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R989	0700036M	RES.-CARBON FLM 1/16W 470-JB	RA69	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R990	0700058M	RES.-CARBON FLM 1/16W 22K-JB	RA70	0195250R	RES 2125 CHIP 1/16W 000 TAPE
R992	AT03608S	METAL OX. 5.6KOHM 3W	RA75	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
R993	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RA76	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RA01	0195918R	RES 2125 CHIP 1/16W 5.6KJ TAPE	RA77	0195250R	RES 2125 CHIP 1/16W 000 TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
RA78	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RA79	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RA80	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RA81	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RA82	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RA83	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RA84	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
RA85	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
RA86	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RA91	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RA92	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
RA93	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
RA94	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RA99	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA6	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAA7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RAD8	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RAD9	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RAE1	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
RAE2	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
RAE3	0195960R	RES MINI-CHIP RMC1/16 270K-J TAPE
RC02	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RC14	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RC16	0195871R	RMC73S-2A750JR
RC18	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RC19	0195871R	RMC73S-2A750JR
RC63	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RC89	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RC98	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RE01	AT03584S	METAL OX. 680OHM 3W
RE02	0700066M	RES.-CARBON FLM 1/16W 82K-JB
RE03	0700057M	RES.-CARBON FLM 1/16W 18K-JB
RE04	0700035M	RES.-CARBON FLM 1/16W 390-JB
RE05	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
RE06	0700031M	RES.-CARBON FLM 1/16W 180-JB
RE07	0700065M	RES.-CARBON FLM 1/16W 68K-JB
RE08	0700059M	RES.-CARBON FLM 1/16W 27K-JB
RE09	0700039M	RES.-CARBON FLM 1/16W 820-JB
RE10	0700033M	RES.-CARBON FLM 1/16W 270-JB
RE11	0700033M	RES.-CARBON FLM 1/16W 270-JB
RE12	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
RE13	0700058M	RES.-CARBON FLM 1/16W 22K-JB
RE14	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RE15	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
RE16	0113742M	RES.-CARBON FLM 1/2W 470-JB
RE18	0700036M	RES.-CARBON FLM 1/16W 470-JB
RE19	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RE20	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RE21	0100065M	RES.-CARBON FLM 1/8W 1K-JB
RE22	0700027M	RES.-CARBON FLM 1/16W 100-JB
RE23	0113701M	RESISTOR CARBON FILM SRD1/2P-B 10-J
RE24	0100039M	RES.-CARBON FLM 1/8W 82-JB
RE25	0188133M	RES.-CARBON FLM 1/2W 1.5K-JB
RE26	0188132M	RES.-CARBON FLM 1.2K-J 1/2W
RE27	0188155M	RES.-CARBON FLM 68K-JB
RE28	0188155M	RES.-CARBON FLM 68K-JB
RE29	0113776M	RESISTOR CARBON FILM SRD1/2P-B 12K-J
RE30	0100039M	RES.-CARBON FLM 1/8W 82-JB
RE31	0100069M	RES.-CARBON FLM 1/8W 1.5K-JB
RE32	0100067M	RES.-CARBON FLM 1/8W 1.2K-JB
RE33	0113704M	RESISTOR CARBON FILM SRD1/2P-B 13-J
RE34	AT03571S	METAL OX. 220OHM 3W
RE35	0113686M	RES.-CARBON FLM 1/2W 2.7-J
RE36	0113686M	RES.-CARBON FLM 1/2W 2.7-J
RE37	0113704M	RESISTOR CARBON FILM SRD1/2P-B 13-J
RE38	AT03254S	METAL OX. 300OHM 1W
RE39	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RE40	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
RE41	0700035M	RES.-CARBON FLM 1/16W 390-JB
RE43	0700039M	RES.-CARBON FLM 1/16W 820-JB
RE45	0700027M	RES.-CARBON FLM 1/16W 100-JB
RE46	0113746M	RES.-CARBON FLM 1/2W 680-JB
RE47	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RF01	0700058M	RES.-CARBON FLM 1/16W 22K-JB
RF02	0700059M	RES.-CARBON FLM 1/16W 27K-JB
RF03	0700036M	RES.-CARBON FLM 1/16W 470-JB
RF04	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RF07	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RF08	0700056M	RES.-CARBON FLM 1/16W 15K-JB
RF09	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RF10	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB
RF11	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
RF12	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RF13	0700056M	RES.-CARBON FLM 1/16W 15K-JB
RF14	0700025M	RES.-CARBON FLM 1/16W 68-J
RF15	AT03659M	RES.MTL GRAZD FLM 1/2W 390K
RF16	AT03659M	RES.MTL GRAZD FLM 1/2W 390K
RF17	AT03659M	RES.MTL GRAZD FLM 1/2W 390K
RF18	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RF19	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RF20	0700027M	RES.-CARBON FLM 1/16W 100-JB
RF21	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RF22	0700057M	RES.-CARBON FLM 1/16W 18K-JB
RF23	0700063M	RES.-CARBON FLM 1/16W 47K-JB
RF25	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RF26	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RF27	AT03661M	RES.MTL GRAZD FLM 1/2W 470K
RF28	0700062M	RES.-CARBON FLM 1/16W 39K-JB
RF29	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB
RF30	0100103M	RES.-CARBON FLM 1/8W 39K-JB
RF31	0700044M	RES.-CARBON FLM 1/16W 1.8K-JB
RF33	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RF34	0187100M	RES.-CARBON FLM 1/16W 30K-JB
RF35	0187074M	RES.-CARBON FLM 1/16W 2.4K-JB
RF36	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RF37	0700039M	RES.-CARBON FLM 1/16W 820-JB
RF40	AT03241S	METAL OX. 91.0OHM 1W

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RF41	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RK58	AT03204S	METAL OX. 3.9OHM 1W
RF42	0700053M	RES.-CARBON FLM 1/16W 8.2K-JB	RK59	AT03571S	METAL OX. 220OHM 3W
RF43	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RK60	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
RF44	0700061M	RES.-CARBON FLM 1/16W 33K-JB	RK62	AT03202S	METAL OX. 3.3OHM 1W
RF45	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	RK63	AT03566S	METAL OX. 150OHM 3W
RF46	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RK64	0700063M	RES.-CARBON FLM 1/16W 47K-JB
RF47	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RK90	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK01	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK99	0113698M	RES.-CARBON FLM 1/2W 8.2-J
RK02	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM01	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK03	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM02	0700058M	RES.-CARBON FLM 1/16W 22K-JB
RK04	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM03	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB
RK05	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM04	0100065M	RES.-CARBON FLM 1/8W 1K-JB
RK06	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM05	0100065M	RES.-CARBON FLM 1/8W 1K-JB
RK07	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM06	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK08	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM07	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB
RK09	0100057M	RES.-CARBON FLM 1/8W 470-JB	RM08	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB
RK10	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB	RM09	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RK12	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RM10	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK13	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RM11	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK14	0700052M	RES.-CARBON FLM 1/16W 6.8K-JB	RM12	0100125M	RES.-CARBON FLM 1/8W 330K-JB
RK15	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RM13	0100073M	RES.-CARBON FLM 1/8W 2.2K-JB
RK16	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	RM14	0100125M	RES.-CARBON FLM 1/8W 330K-JB
RK17	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RM15	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK18	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB	RM38	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK19	0100125M	RES.-CARBON FLM 1/8W 330K-JB	RM40	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RK22	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RN01	0700057M	RES.-CARBON FLM 1/16W 18K-JB
RK23	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB	RN02	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK24	0700044M	RES.-CARBON FLM 1/16W 1.8K-JB	RN03	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK25	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN04	0100113M	RES.-CARBON FLM 1/8W 100K-JB
RK26	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN05	0700052M	RES.-CARBON FLM 1/16W 6.8K-JB
RK27	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RN06	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK28	0700027M	RES.-CARBON FLM 1/16W 100-JB	RN07	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
RK29	0700027M	RES.-CARBON FLM 1/16W 100-JB	RN08	0700044M	RES.-CARBON FLM 1/16W 1.8K-JB
RK30	0700027M	RES.-CARBON FLM 1/16W 100-JB	RN09	0700061M	RES.-CARBON FLM 1/16W 33K-JB
RK31	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RN10	0700057M	RES.-CARBON FLM 1/16W 18K-JB
RK32	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RN11	0700058M	RES.-CARBON FLM 1/16W 22K-JB
RK33	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RN12	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
RK34	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN13	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK35	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN14	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK36	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN15	0700064M	RES.-CARBON FLM 1/16W 56K-JB
RK37	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN16	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK38	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN17	0700059M	RES.-CARBON FLM 1/16W 27K-JB
RK39	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RN18	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK40	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RS12	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
RK42	AT03199S	METAL OX. 2.7OHM 1W	RS13	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RK43	AT03571S	METAL OX. 220OHM 3W	RS14	0700051M	RES.-CARBON FLM 1/16W 5.6K-JB
RK44	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RS15	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RK46	AT03197S	METAL OX. 2.2OHM 1W	RS32	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RK47	AT03566S	METAL OX. 150OHM 3W	RS33	0700056M	RES.-CARBON FLM 1/16W 15K-JB
RK48	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RS34	AT03665M	RES.MTL GRAZD FLM 1/2W 1M
RK50	AT03202S	METAL OX. 3.3OHM 1W	RS35	AT03666M	RES.MTL GRAZD FLM 1/2W 1.2M
RK51	AT03571S	METAL OX. 220OHM 3W	RS42	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK52	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RS47	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK54	AT03197S	METAL OX. 2.2OHM 1W	RS48	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK55	AT03566S	METAL OX. 150OHM 3W	RSH4	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK56	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RX01	0195935R	RES 2125 CHIP 1/16W 27K-J TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RX02	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE	RY18	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
RX03	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY19	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX04	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY20	0195897R	RES 2125 CHIP 1/16W 820J TAPE
RX05	0195893R	RES 2125 CHIP 1/16W 560J TAPE	RY21	0195914R	RES 2125 CHIP 1/16W 3.9KJ TAPE
RX06	0195904R	RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE	RY22	0195887R	RES 2125 CHIP 1/16W 330J TAPE
RX07	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY23	0195872R	RES 2125 CHIP 1/10W 82-J TAPE
RX08	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY24	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX22	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY25	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE
RX26	0195967R	RESISTOR MINI-CHIP RMC1/16 510K-J TAPE	RY26	0195904R	RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE
RX27	0195912R	RES 2125 CHIP 1/16W 3.3KJ TAPE	RY27	0195915R	RESISTOR MINI-CHIP RMC1/16 4.3K-J TAPE
RX28	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY28	0195920R	RES 2125 CHIP 1/16W 6.8KJ TAPE
RX29	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY29	0195912R	RES 2125 CHIP 1/16W 3.3KJ TAPE
RX30	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY30	0700027M	RES.-CARBON FLM 1/16W 100-JB
RX31	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY31	0195871R	RMC73S-2A750JR
RX32	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY32	0195871R	RMC73S-2A750JR
RX33	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY33	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
RX34	0195931R	RES 2125 CHIP 1/16W 18KJ TAPE	RY34	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
RX35	0195943R	RES.2125 CHIP 1/16W 56KJ TAPE	RY35	0195871R	RMC73S-2A750JR
RX36	0195891R	RES 2125 CHIP 1/16W 470J TAPE	RY39	0195887R	RES 2125 CHIP 1/16W 330J TAPE
RX37	0195889R	RES.2125 CHIP 1/10W 390J TAPE	RY40	0195893R	RES 2125 CHIP 1/16W 560J TAPE
RX38	0195887R	RES 2125 CHIP 1/16W 330J TAPE	RY41	0195870R	RESISTOR MINI-CHIP RMC1/10 68-J TAPE
RX39	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	RY42	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE
RX40	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY43	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX41	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY44	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RX42	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY46	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RX43	0195893R	RES 2125 CHIP 1/16W 560J TAPE	RY48	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RX45	0195939R	RMC73S-2A393JR	RY50	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX46	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	RY51	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX47	0195891R	RES 2125 CHIP 1/16W 470J TAPE	RY52	0195941R	RESISTOR 2125 CHIP 1/16W 47KJ TAPE
RX48	0195887R	RES 2125 CHIP 1/16W 330J TAPE	RY53	0195933R	RES.2125 CHIP 1/16W 22KJ TAPE
RX49	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY55	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RX50	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RY56	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RX51	0195912R	RES 2125 CHIP 1/16W 3.3KJ TAPE	RY57	0195897R	RES 2125 CHIP 1/16W 820J TAPE
RX52	0195927R	RES 2125 CHIP 1/16W 12KJ TAPE	RY61	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RX53	0195922R	RES 2125 CHIP 1/16W 8.2KJ TAPE	RY62	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RX55	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY64	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RX57	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	RY65	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RX58	0195952R	RMC73S-2A124JR	RY69	0700032M	RES.-CARBON FLM 1/16W 220-JB
RX59	0195922R	RES 2125 CHIP 1/16W 8.2KJ TAPE	RY70	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE
RX60	0195914R	RES 2125 CHIP 1/16W 3.9KJ TAPE	RY71	0700027M	RES.-CARBON FLM 1/16W 100-JB
RX62	0195250R	RES 2125 CHIP 1/16W 000 TAPE	RY72	0700027M	RES.-CARBON FLM 1/16W 100-JB
RX63	0195250R	RES 2125 CHIP 1/16W 000 TAPE	RY73	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RY01	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY74	0195897R	RES 2125 CHIP 1/16W 820J TAPE
RY05	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY75	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RY06	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY77	0195960R	RES MINI-CHIP RMC1/16 270K-J TAPE
RY07	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY78	0195960R	RES MINI-CHIP RMC1/16 270K-J TAPE
RY08	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY79	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RY09	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RY81	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RY10	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RY83	0195250R	RES 2125 CHIP 1/16W 000 TAPE
RY11	0195900R	RES 2125 CHIP 1/16W 1KJ TAPE	RY84	0195897R	RES 2125 CHIP 1/16W 820J TAPE
RY12	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RY85	0195871R	RMC73S-2A750JR
RY13	0195250R	RES 2125 CHIP 1/16W 000 TAPE	RY86	0195871R	RMC73S-2A750JR
RY14	0195250R	RES 2125 CHIP 1/16W 000 TAPE	RY87	0195871R	RMC73S-2A750JR
RY15	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	RY88	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RY16	0195908R	RES.2125 CHIP 1/10W 2.2KJ TAPE	RY89	0195875R	RES 2125 CHIP 1/16W 100J TAPE
RY17	0195912R	RES 2125 CHIP 1/16W 3.3KJ TAPE	RY90	0195943R	RES.2125 CHIP 1/16W 56KJ TAPE

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RY91	0195937R	RES.2125 CHIP 1/16W 33KJ TAPE	RYJ7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RY96	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RYJ8	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RY98	0195897R	RES 2125 CHIP 1/16W 820J TAPE	RYJ9	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RY99	0195943R	RES.2125 CHIP 1/16W 56KJ TAPE	RYK1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RYA1	0195937R	RES.2125 CHIP 1/16W 33KJ TAPE	RYK2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE
RYA2	0195875R	RES 2125 CHIP 1/16W 100J TAPE	RZ09	0147152	RES.-WIRE WOUND 3W 27-JA CEMENTED
RYA3	0195891R	RES 2125 CHIP 1/16W 470J TAPE			
RYA4	0195891R	RES 2125 CHIP 1/16W 470J TAPE			**TRANSFORMERS**
RYA5	0195885R	RESISTOR 2125 CHIP 1/16W 270J TAPE			
RYA6	0195875R	RES 2125 CHIP 1/16W 100J TAPE	⚠ T701	2260291U	HORIZONTAL DRIVE TRANS.
RYA7	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	⚠ T702	BW00632	HFL1735YP-RC FLYBACK TRANSFER
RYA8	0195897R	RES 2125 CHIP 1/16W 820J TAPE	⚠ T703	2272762	TRANS.-SATURBLE
RYA9	0195943R	RES.2125 CHIP 1/16W 56KJ TAPE	⚠ T901	BT00801	POWER TRANSFORMER EE49F17U-AP73F
RYC1	0195937R	RES.2125 CHIP 1/16W 33KJ TAPE			
RYC2	0195875R	RES 2125 CHIP 1/16W 100J TAPE			**SWITCHES**
RYC3	0195891R	RES 2125 CHIP 1/16W 470J TAPE			
RYC4	0195891R	RES 2125 CHIP 1/16W 470J TAPE	SM01	FE00001R	PUSH SWITCH
RYC5	0195889R	RES.2125 CHIP 1/10W 390J TAPE	SM02	FE00001R	PUSH SWITCH
RYC6	0195875R	RES 2125 CHIP 1/16W 100J TAPE	SM03	FE00001R	PUSH SWITCH
RYC7	0195925R	RES 2125 CHIP 1/16W 10KJ TAPE	SM04	FE00001R	PUSH SWITCH
RYC8	0195897R	RES 2125 CHIP 1/16W 820J TAPE	SM05	FE00001R	PUSH SWITCH
RYC9	0195875R	RES 2125 CHIP 1/16W 100J TAPE	SM06	FE00001R	PUSH SWITCH
RYE2	0195875R	RES 2125 CHIP 1/16W 100J TAPE	SM07	FE00001R	PUSH SWITCH
RYE3	0195893R	RES 2125 CHIP 1/16W 560J TAPE	SM09	FE00091	SWP01N01-EVQQKH08Q
RYE4	0195893R	RES 2125 CHIP 1/16W 560J TAPE	SZ01	FD000041	SLIDE SWITCH
RYE5	0195893R	RES 2125 CHIP 1/16W 560J TAPE	SK01	FE00061	1P TACT SWITCH
RYE6	0195875R	RES 2125 CHIP 1/16W 100J TAPE			
RYE7	0195893R	RES 2125 CHIP 1/16W 560J TAPE			**MISCELLANEOUS**
RYE8	0195893R	RES 2125 CHIP 1/16W 560J TAPE			
RYE9	0195893R	RES 2125 CHIP 1/16W 560J TAPE	E10B	2776543	MAG-VM(C-C)2/4P1.8UH
RYF1	0700025M	RES.-CARBON FLM 1/16W 68-J	E10G	2776543	MAG-VM(C-C)2/4P1.8UH
RYF2	0195870R	RESISTOR MINI-CHIP RMC1/10 68-J TAPE	E10R	2776543	MAG-VM(C-C)2/4P1.8UH
RYF3	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE	⚠ E12B	BY01101	DY-V80-7.0SS3.0L AKME YOKE ASS'Y
RYF4	0195950R	RES 2125 CHIP 1/16W 100KJ TAPE	⚠ E12G	BY01101	DY-V80-7.0SS3.0L AKME YOKE ASS'Y
RYG1	0195250R	RES 2125 CHIP 1/16W 000 TAPE	⚠ E12R	BY01101	DY-V80-7.0SS3.0L AKME YOKE ASS'Y
RYG4	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	E201	FQ00021	BATTERY(R6P-AA)
RYG5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	E2R	EZ00911	COZ-ANODE COVER SP45-S3
RYG6	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E3R	2958351	CONN. W/WIRE MINI 2J
RYG7	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E301	HL00726	RML CLU-435UI REMOTE CONTROL
RYG8	0195250R	RES 2125 CHIP 1/16W 000 TAPE	⚠ E701	AZ00107M	PROTECTOR CRXT491004
RYG9	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	⚠ E801	EY00941	CRT-SOCKET
RYH1	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	⚠ E831	EY00941	CRT-SOCKET
RYH2	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	⚠ E861	EY00941	CRT-SOCKET
RYH3	0195250R	RES 2125 CHIP 1/16W 000 TAPE	⚠ E901	EV00901	COD-AP9X-B-160
RYH4	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E92F	3446473	HEATSINK H30 P10
RYH5	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E92N	4520883	3*12 SCREW WITH WASHER
RYH6	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	E93F	3446473	HEATSINK H30 P10
RYH7	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	E93N	4520883	3*12 SCREW WITH WASHER
RYH8	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E98F	MC00104	HEAT SINK P10 H45 19 A6063S-75
RYH9	0195250R	RES 2125 CHIP 1/16W 000 TAPE	E98N	4520883	3*12 SCREW WITH WASHER
RYJ1	0195893R	RES 2125 CHIP 1/16W 560J TAPE	⚠ E991	AZ00109M	PROTECTOR CRXT491007
RYJ2	0195893R	RES 2125 CHIP 1/16W 560J TAPE	⚠ E994	AZ00104M	PROTECTOR(CRXT491002)
RYJ3	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	⚠ E995	AZ00109M	PROTECTOR CRXT491007
RYJ4	0195250R	RES 2125 CHIP 1/16W 000 TAPE	⚠ E996	AZ00109M	PROTECTOR CRXT491007
RYJ5	0195248R	RES 3216 CHIP 1/8 W 000 TAPE	⚠ E997	AZ00109M	PROTECTOR CRXT491007
RYJ6	0195250R	RES 2125 CHIP 1/16W 000 TAPE	⚠ E999	AZ00109M	PROTECTOR CRXT491007

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
E99F	MC00104	HEAT SINK P10 H45 19 A6063S-75	P832	2661756	1P PLUG PIN WITH BASE
E99N	4520883	3*12 SCREW WITH WASHER	P861	2961141	2P PLUG PIN WITH BASE
E9A	MA00842	POWER HEAT SINK A1100P-H14	P862	2661756	1P PLUG PIN WITH BASE
E9DN	4520883	3*12 SCREW WITH WASHER	⚠ P901	ED01851	PLUG 5289-2A
E9DW	4269926	WASHER PL-1252	PB	2661756	1P PLUG PIN WITH BASE
E9IN	4520883	3*12 SCREW WITH WASHER	PB	2661756	1P PLUG PIN WITH BASE
E9QF	MC00104	HEAT SINK P10 H45 19	PCB	ED00572	CP-TAC-L15X-A1
E9QN	4520883	3*12 SCREW WITH WASHER	PCB	ED00512	CP-TAC-L15P-A1
EBG1	EF08271	CO-06B-B2R5-301	PCB	2903544	4P PLUG PIN WITH BASE
EBG2	2966821	4J CONNE. L=300	PCC	ED00516	CP-TAC-L20P-A1
ED94	EY00791	PJX-LEAD-PLUGPIN	PCC	ED00576	CP-TAC-L20X-A1
ED95	EY00791	PJX-LEAD-PLUGPIN	PCD	ED00516	CP-TAC-L20P-A1
ED99	EY00791	PJX-LEAD-PLUGPIN	PCG	2903544	4P PLUG PIN WITH BASE
EF91	FP00031R	FUSE HOLDER TP00351-51	PCR	2903544	4P PLUG PIN WITH BASE
EAN	2974056S	3J CONNE SEH UL1007 L=160	PCX	ED00512	CP-TAC-L15P-A1
EFC	2974086S	CONNE 4P L=160	PDC	ED00565	CP-TAC-L09X-A1
EGR1	EF08381	CO-05B-B2R5-301	PCD	ED00576	CP-TAC-L20X-A1
EGR2	2966821	4J CONNE. L=300	PCX	ED00572	CP-TAC-L15X-A1
⚠ G701	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PDG	ED00572	CP-TAC-L15X-A1
⚠ G801	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PDS	ED00565	CP-TAC-L09X-A1
⚠ G802	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PFC	2902263	PLUG PIN SUB MINI 4P
⚠ G831	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PFJ	2902248	PLUG PIN SUB MINI9P
⚠ G832	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PSD3	ED01492U	CONNECTOR 11BS1R2VUTWGX-A1
⚠ G861	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PSD3	ED01472U	PLUG 11BP1R2HUTWGP-A1
⚠ G862	CJ00071R	SPARK GAP AG15PC-152FS-K2M	PSD4	ED01493U	CONNECTOR 13BS1R2VUTWGX-A1
JY01	ES00182	JACK 3S-14US AP92	PSD4	ED01473U	PLUG 13BP1R2HUTWGP-A1
JZ01	ER00121	2L4P LEVER TERMINAL	PFJ	2902268	PLUG PIN SUB MINI 9P
GF01	CJ00072R	SEMICONDUCTOR 252FB-K2M	PFT	ED01596U	PLUG CP-04BP5R0VU-TBL#2,3N
N101R	ND00069	CPD BRACKET RB50-3	PL	2903545	5P PLUG PIN WITH BASE
N111R	3810112	HP BELLOWS STAY	PMB	ED01597U	PLUG CP-06BP5R0VU-TBL#3,5N
N121R	4738241	ORING PRTX	PMG	ED01597U	PLUG CP-06BP5R0VU-TBL#3,5N
N123R	KX00062	CP LENS SEAL	PMR	ED01597U	PLUG CP-06BP5R0VU-TBL#3,5N
N125R	4621121	BELLOWS R EPDM	PP	2903543	3P PLUG PIN WITH BASE
N131R	NA02922	CPC LENS FIX METAL	PP	2903543	3P PLUG PIN WITH BASE
N135R	4491972	PRT METAL (AP74)	PP31	2661751	2P PLUG PIN WITH BASE
N200B	KQ00811	CPD38 LENS AB ASS'Y	PR	2903544	4P PLUG PIN WITH BASE
N200G	KQ00811	CPD38 LENS AB ASS'Y	PSD1	ED01491U	CONNECTOR 07BS1R2VUTWGX-A1
N200R	KQ00811	CPD38 LENS AB ASS'Y	PSD1	ED01471U	PLUG 07BP1R2HUTWGP-A1
N201	QR29311	50GX49B-511 INST.BOOK	PSD2	ED01492U	CONNECTOR 11BS1R2VUTWGX-A1
N300R	KQ00823	DELTA 38 C-ELEMENT R	PSD2	ED01472U	PLUG 11BP1R2HUTWGP-A1
N301R	9483051	COOLANT (GE-55)	PSD3	ED01492U	CONNECTOR 11BS1R2VUTWGX-A1
N703	NT00981	FBT HOLDER AP74 PS(HI=100%)	PSD3	ED01472U	PLUG 11BP1R2HUTWGP-A1
N711	NA03111	CHASSIS PWB BRACKET	PSD4	ED01493U	CONNECTOR 13BS1R2VUTWGX-A1
N715	NA20921	CHASSIS PWB BKT	PSD4	ED01473U	PLUG 13BP1R2HUTWGP-A1
N721	4491082	CHASSIS PWB BKT	PSD3	ED01492U	CONNECTOR 11BS1R2VUTWGX-A1
N725	NA03131	CHASSIS PWB BRACKET	PSD3	ED01472U	PLUG 11BP1R2HUTWGP-A1
NK05	MC00192	CONV.HEAT SINK AP73B A6063S-T5	PSD4	ED01493U	CONNECTOR 13BS1R2VUTWGX-A1
NK06	4520885	3*16 SCREW WITH WASHER	PSD4	ED01473U	PLUG 13BP1R2HUTWGP-A1
NK07	4531761	SCREEN 3X16 TAPPING W/S-WASHER STEEL	PSD5	ED01471U	PLUG 07BP1R2HUTWGP-A1
NK08	NA20781	CONV. IC SUPPORT BRACKET	PSD5	ED01491U	CONNECTOR 07BS1R2VUTWGX-A1
NM71	3816161	G9 EE HOLDER (S)	PSI1	ED00515	CP-TAC-L18P-A1
NM72	NJ01171	LED HOLDER A5WS	PSI1	ED00575	CP-TAC-L18X-A1
P001	2663821	2P SUB MINI PLUG PIN	PSI2	ED00515	CP-TAC-L18P-A1
P801	2961141	2P PLUG PIN WITH BASE	PSI2	ED00575	CP-TAC-L18X-A1
P802	2661756	1P PLUG PIN WITH BASE	PST	2675286	PH CONNE. 7P
P831	2961141	2P PLUG PIN WITH BASE	PSU1	ED00576	CP-TAC-L20X-A1

REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
PSU1	ED00516	CP-TAC-L20P-A1			**EXPLODED VIEW**
PTS	2663821	2P SUB MINI PLUG PIN			**PARTS LIST**
PVM1	ED00566	CP-TAC-L10X-A1			
PVM2	ED00566	CP-TAC-L10X-A1	①	PH05723	CONTROL PANEL ASS'Y
PVM1	ED00506	CP-TAC-L10P-A1	②	NAIl701	LENS/CRT METAL
PVM2	ED00506	CP-TAC-L10P-A1	③	KS00169	MIRROR
PVMC	2902262	PLUG PIN SUB MINI 3P	④	33010299	BARRIER BOARD
PY1	2959055	CONNECTOR-6P(PH)	⑤	QD03841	REAR COVER
PY1	2675285	PIN POST (PH 6P)	⑥	55020069	FRONT DOOR ASS'Y
PY2	2902263	PLUG PIN SUB MINI 4P	⑦	3320048	BACK CENTER BAR
PY2	2902263	PLUG PIN SUB MINI 4P	⑧	H512244	LOWER REAR BOARD
⚠ U401	2412921	SPEAKER 160 DG	⑨	32110067	SPEAKER GRILL ASS'Y
⚠ U402	2412921	SPEAKER 160 DG	⑩	NA11681	MIRROR METAL A
⚠ V1B	DEO1083	CRT 180DLB22B	⑪	NAI11691	MIRROR METAL B
⚠ V1G	DE01082	CRT 180DLB22 G	⑫	KR00272	SCREEN ASS'Y
⚠ V1R	DE01081	CRT 180DLB22 R	⑬	H311404	DECO FRAME PAINTED
X100	BP00771	OSXR032X121TA252E00	⑭	H311399	TOP FRAME PAINTED
X501	2791501	CRYSTAL HC-49/U	⑮	DE01081	CRT 180DLB22(R)
X502	2168771	X'TAL CSB503F30	⑯	DE01082	CRT 180DLB22(G)
XX02	BJ00141	COIL (LC FILTER) 3.58 MHz	⑰	DE01083	CRT 180DLB22(B)
XX03	BJ00112	COIL (LC FILTER) 6 MHz	⑱	KQ00823	DELTA38 C-ELEMENT (R)
			⑲	KQ00822	DELTA38 C-ELEMENT (G)
			⑳	KQ00821	DELTA38 C-ELEMENT (B)

HITACHI